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AN INVESTIGATION OF THE RELATIONSHIP BETWEEN
THE PROFESSIONAL ROLE ORIENTATION AND
SOCIAL STRUCTURE OF TEACHER GROUPS

by



MURRAY PATRICK SCHARF

A THESIS

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The undersigned certify that they have read, and recommend to the Faculty of Graduate Studies for acceptance of thesis entitled "An Investigation of the Relationship between the Role Orientation and Social Structure of Teacher Groups" submitted by Murray Patrick Scharf in partial fulfilment of the requirements for the degree of Doctor of Philosophy.

APPENDIX A: THE WRITER

The writer has been very fortunate in the support of many individuals and organizations who have helped him in his work. The writer has been very fortunate in the support of many individuals and organizations who have helped him in his work. The writer has been very fortunate in the support of many individuals and organizations who have helped him in his work.

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ABSTRACT OF THE STUDY

The study was designed for the purpose of exploring the relationship between a school's and individual's professional role orientation and the social structure of teacher groups. It has been an attempt to determine if the values associated with professionalism form the "in-group" or dominant values of teacher groups. A secondary purpose was to ascertain if the basic social relationships enunciated by Homans were exhibited in teacher groups, thereby obtaining some measure of the utility of this theory for predicting elements of the social structure.

George Caspar Homans' "Exchange Theory" has provided the theoretical basis for describing the nature and dynamics of the linkage among value orientation, social behavior and group structures. In summary, the theoretical background for this study stated that if the major premise, that the values associated with a professional role orientation were the "in-group" social values in teacher groups was valid then, following Homans' theory, there should be a positive relationship between these values and the social structure components of rate of interaction, strength of the sentiments of friendship, technical and social esteem and cohesiveness. In turn, there should be a positive relationship between professional role orientation and the satisfaction product of the social structure: satisfaction with the total work situation and satisfaction with the performance of the principal. These relationships constituted the hypotheses tested in this study.

Hrynyk's Professional Role Orientation Scale was chosen as the instrument for gathering data on the professionalism of teachers and schools. Measures of social structure were obtained for each school by the administration of the School Social Structure Questionnaire. An instrument developed by Andrews and Von Fange was used to gather data on the satisfaction of teachers and the cohesiveness of schools. A measure of the teacher's satisfaction with the performance of the principal was achieved by using the Principal Evaluation Questionnaire.

The sample for the study consisted of twenty-five schools and their full-time staff members chosen from the Edmonton Public School System. The sample ranged in school size from 15 to 43 teachers with the average being 24.7. The percentage of return of completed questionnaires ranged from 67 per cent to 100 per cent from individual schools and was 86 per cent from the total sample. Complete data were collected for 529 teachers.

Conclusions

For the sample used in this study:

1. The degree of professional role orientation prevalent in a school had no significant relationship with the school's rate of emergent interaction.
2. For individuals, there was no significant relationship between their professional role orientation and their perceived and attributed rate of social interaction.

3. The strength of the sentiments of friendship within teacher groups was independent of their average professional role orientation.

4. There was a positive relationship between the professional role orientation of a teacher and his strength of sentiments of friendship. It was postulated that this relationship may have been mediated by two other variables: (1) the number of years of teaching experience in a school and (2) the total number of years of formal training held by the individual.

5. The degree of consensus within teacher groups on the professional role orientation was independent of their average professional role orientation.

6. The values, attitudes and opinions contained in a professional role orientation were not integrated into the norms of teacher groups.

7. The level of cohesiveness within a teacher group was independent of the group's average professional role orientation.

8. The technical esteem in which teachers were held by their teacher group was independent of their professional role orientation.

9. The group values upon which social esteem was adjudged were not those associated with a professional role orientation.

10. The relationship between professional role orientation and technical and social esteem had no connection with the average professional role orientation of the school.

11. The relationship between rankings according to technical and social esteem was not closer in the teacher groups having a higher average professional role orientation.

12. The technical and social esteem in which a principal was held by his staff of teachers was independent of his professional role orientation.

13. Teachers did not use the values associated with a professional role orientation in establishing social and work subgroups within schools.

14. Work and social subgroups were not founded around professional role types.

15. The identification of deviates in the teacher groups was on a basis independent of the extent that the deviant individual held the values associated with a professional role orientation.

16. Teachers' satisfaction was positively related to their professional role orientation but was not of sufficient magnitude to justify predictions within schools.

17. In the teachers' appraisal of the performance of the principal, his professional role orientation was of little consequence.

18. The teacher's evaluation of the performance of the principal was independent of the teacher's professional role orientation.

General Conclusions

The values associated with a professional role orientation did

not form the "in-group" or dominant social values in this sample of teacher groups.

The relationships hypothesized in Homans' "Exchange Theory" form an appropriate model for studying the social behavior and social structure of teachers and teacher groups.

One from the "Group" as a whole, about 1914, is as follows:

John G. Galt

The following is a list of the names of the members of the

Group as of the 1st of January, 1914.

Names of members are given in alphabetical order.

TABLE OF CONTENTS

	Page
LIST OF TABLES	xiii
LIST OF FIGURES	xx
Chapter	
I. THE PROBLEM	1
I. Introduction	1
Statement of the problem	3
II. Importance of the Study	4
III. Definition and Description of Terms	16
II. THEORETICAL BACKGROUND AND HYPOTHESES	25
I. General Statement	25
II. Profession, Professionalism and Professionalization	26
III. Exchange Theory and Elementary Social Behavior	33
General propositions	33
Summary	44
IV. Exchange Theory, Small-group Behavior and Professionalism	44
Introduction.....	44
The Model	46
Background Factors and required and given behavior	46
The mutual dependence of senti- ments and interaction	48
Norms and emergent sentiments	53
Cohesiveness	60

Page		
1	.....	LIST OF TABLES
2	.....	LIST OF FIGURES
	
3	.....	1. THE PROBLEM
4	.....	2. LITERATURE REVIEW
5	.....	3. STATEMENT OF THE PROBLEM
6	.....	4. IMPORTANCE OF THE STUDY
7	.....	5. DEFINITION AND DELIMITATION OF STUDY
8	.....	6. THEORETICAL FRAMEWORK AND HYPOTHESES
9	.....	7. RESEARCH DESIGN
10	.....	8. DATA COLLECTION, INSTRUMENTS AND VALIDITY
11	.....	9. DATA ANALYSIS
12	.....	10. RESULTS AND DISCUSSION
13	.....	11. CONCLUSION
14	.....	12. SUMMARY, RECOMMENDATIONS AND SUGGESTIONS FOR FURTHER STUDY
15	.....	13. REFERENCES
16	.....	14. APPENDICES
17	.....	15. GLOSSARY
18	.....	16. BIOGRAPHICAL SKETCH
19	.....	17. CURRICULUM VITAE
20	.....	18. STATEMENT OF AUTHENTICITY
21	.....	19. CERTIFICATE OF ORIGIN
22	.....	20. DECLARATION OF ORIGINALITY
23	.....	21. ACKNOWLEDGEMENTS
24	.....	22. DEDICATION
25	.....	23. MOTIVATION
26	.....	24. MOTIVATION
27	.....	25. MOTIVATION
28	.....	26. MOTIVATION
29	.....	27. MOTIVATION
30	.....	28. MOTIVATION
31	.....	29. MOTIVATION
32	.....	30. MOTIVATION
33	.....	31. MOTIVATION
34	.....	32. MOTIVATION
35	.....	33. MOTIVATION
36	.....	34. MOTIVATION
37	.....	35. MOTIVATION
38	.....	36. MOTIVATION
39	.....	37. MOTIVATION
40	.....	38. MOTIVATION
41	.....	39. MOTIVATION
42	.....	40. MOTIVATION
43	.....	41. MOTIVATION
44	.....	42. MOTIVATION
45	.....	43. MOTIVATION
46	.....	44. MOTIVATION
47	.....	45. MOTIVATION
48	.....	46. MOTIVATION
49	.....	47. MOTIVATION
50	.....	48. MOTIVATION
51	.....	49. MOTIVATION
52	.....	50. MOTIVATION
53	.....	51. MOTIVATION
54	.....	52. MOTIVATION
55	.....	53. MOTIVATION
56	.....	54. MOTIVATION
57	.....	55. MOTIVATION
58	.....	56. MOTIVATION
59	.....	57. MOTIVATION
60	.....	58. MOTIVATION
61	.....	59. MOTIVATION
62	.....	60. MOTIVATION
63	.....	61. MOTIVATION
64	.....	62. MOTIVATION
65	.....	63. MOTIVATION
66	.....	64. MOTIVATION
67	.....	65. MOTIVATION
68	.....	66. MOTIVATION
69	.....	67. MOTIVATION
70	.....	68. MOTIVATION
71	.....	69. MOTIVATION
72	.....	70. MOTIVATION
73	.....	71. MOTIVATION
74	.....	72. MOTIVATION
75	.....	73. MOTIVATION
76	.....	74. MOTIVATION
77	.....	75. MOTIVATION
78	.....	76. MOTIVATION
79	.....	77. MOTIVATION
80	.....	78. MOTIVATION
81	.....	79. MOTIVATION
82	.....	80. MOTIVATION
83	.....	81. MOTIVATION
84	.....	82. MOTIVATION
85	.....	83. MOTIVATION
86	.....	84. MOTIVATION
87	.....	85. MOTIVATION
88	.....	86. MOTIVATION
89	.....	87. MOTIVATION
90	.....	88. MOTIVATION
91	.....	89. MOTIVATION
92	.....	90. MOTIVATION
93	.....	91. MOTIVATION
94	.....	92. MOTIVATION
95	.....	93. MOTIVATION
96	.....	94. MOTIVATION
97	.....	95. MOTIVATION
98	.....	96. MOTIVATION
99	.....	97. MOTIVATION
100	.....	98. MOTIVATION
101	.....	99. MOTIVATION
102	.....	100. MOTIVATION

TABLE OF CONTENTS (Cont.)

Chapter		Page
	Esteem.....	64
	Leadership.....	70
	Subgroup formation.....	72
	Regular group members, deviates and isolates.....	76
	Satisfaction.....	79
V.	The Hypotheses	83
VI.	Delimitations and Limitations of the Study	85
VII.	Assumptions	89
III.	REVIEW OF THE LITERATURE	90
I.	Literature Dealing with the Pro- fessions and Professionalism	90
II.	Literature Dealing with the Relationships Described in Exchange Theory, Small-group Behavior and the Social Structure of Groups	103
IV.	METHODS OF INVESTIGATION	121
I.	Selection of the Sample	121
II.	Administrative Procedures	122
III.	Instrumentation	123
	Teacher background information questionnaire	123
	Teacher opinion questionnaire.....	123
	School social organization questionnaire	139
	Teacher satisfaction questionnaire.....	148
	Principal evaluation questionnaire	149

TABLE OF CONTENTS (Cont.)

Chapter	Page
IV. Statistical Procedures	150
V. Summary	157
V. ANALYSIS OF THE DATA	158
I. Description of the Sample	158
II. Testing the Hypotheses	162
Hypothesis number one	162
Hypothesis number two	178
Hypothesis number three	188
Hypothesis number four	190
Hypothesis number five	196
Hypothesis number six	200
Hypothesis number seven	204
Hypothesis number eight	209
Hypothesis number nine	211
Hypothesis number ten	215
Hypothesis number eleven	219
Hypothesis number twelve	223
Hypothesis number thirteen	235
Hypothesis number fourteen	237
Hypothesis number fifteen	247
III. Summary	257
VI. SUMMARY AND CONCLUSIONS	259
I. Summary of the Study	259
II. Conclusions and Implications	276
Conclusions	276
General conclusions	278
Implications for research	278
Implications for educational administration	281
BIBLIOGRAPHY	286
APPENDIX A The Teacher Background Information Questionnaire	299

100	1. Introduction
101	2. Objectives
102	3. Methodology
103	4. Results
104	5. Discussion
105	6. Conclusion
106	7. References
107	8. Appendix
108	9. Glossary
109	10. Bibliography
110	11. Index
111	12. Summary
112	13. Acknowledgements
113	14. Appendix
114	15. Glossary
115	16. Bibliography
116	17. Index
117	18. Summary
118	19. Acknowledgements
119	20. Appendix
120	21. Glossary
121	22. Bibliography
122	23. Index
123	24. Summary
124	25. Acknowledgements
125	26. Appendix
126	27. Glossary
127	28. Bibliography
128	29. Index
129	30. Summary
130	31. Acknowledgements
131	32. Appendix
132	33. Glossary
133	34. Bibliography
134	35. Index
135	36. Summary
136	37. Acknowledgements
137	38. Appendix
138	39. Glossary
139	40. Bibliography
140	41. Index
141	42. Summary
142	43. Acknowledgements
143	44. Appendix
144	45. Glossary
145	46. Bibliography
146	47. Index
147	48. Summary
148	49. Acknowledgements
149	50. Appendix
150	51. Glossary
151	52. Bibliography
152	53. Index
153	54. Summary
154	55. Acknowledgements
155	56. Appendix
156	57. Glossary
157	58. Bibliography
158	59. Index
159	60. Summary
160	61. Acknowledgements
161	62. Appendix
162	63. Glossary
163	64. Bibliography
164	65. Index
165	66. Summary
166	67. Acknowledgements
167	68. Appendix
168	69. Glossary
169	70. Bibliography
170	71. Index
171	72. Summary
172	73. Acknowledgements
173	74. Appendix
174	75. Glossary
175	76. Bibliography
176	77. Index
177	78. Summary
178	79. Acknowledgements
179	80. Appendix
180	81. Glossary
181	82. Bibliography
182	83. Index
183	84. Summary
184	85. Acknowledgements
185	86. Appendix
186	87. Glossary
187	88. Bibliography
188	89. Index
189	90. Summary
190	91. Acknowledgements
191	92. Appendix
192	93. Glossary
193	94. Bibliography
194	95. Index
195	96. Summary
196	97. Acknowledgements
197	98. Appendix
198	99. Glossary
199	100. Bibliography
200	101. Index
201	102. Summary
202	103. Acknowledgements
203	104. Appendix
204	105. Glossary
205	106. Bibliography
206	107. Index
207	108. Summary
208	109. Acknowledgements
209	110. Appendix
210	111. Glossary
211	112. Bibliography
212	113. Index
213	114. Summary
214	115. Acknowledgements
215	116. Appendix
216	117. Glossary
217	118. Bibliography
218	119. Index
219	120. Summary
220	121. Acknowledgements
221	122. Appendix
222	123. Glossary
223	124. Bibliography
224	125. Index
225	126. Summary
226	127. Acknowledgements
227	128. Appendix
228	129. Glossary
229	130. Bibliography
230	131. Index
231	132. Summary
232	133. Acknowledgements
233	134. Appendix
234	135. Glossary
235	136. Bibliography
236	137. Index
237	138. Summary
238	139. Acknowledgements
239	140. Appendix
240	141. Glossary
241	142. Bibliography
242	143. Index
243	144. Summary
244	145. Acknowledgements
245	146. Appendix
246	147. Glossary
247	148. Bibliography
248	149. Index
249	150. Summary
250	151. Acknowledgements
251	152. Appendix
252	153. Glossary
253	154. Bibliography
254	155. Index
255	156. Summary
256	157. Acknowledgements
257	158. Appendix
258	159. Glossary
259	160. Bibliography
260	161. Index
261	162. Summary
262	163. Acknowledgements
263	164. Appendix
264	165. Glossary
265	166. Bibliography
266	167. Index
267	168. Summary
268	169. Acknowledgements
269	170. Appendix
270	171. Glossary
271	172. Bibliography
272	173. Index
273	174. Summary
274	175. Acknowledgements
275	176. Appendix
276	177. Glossary
277	178. Bibliography
278	179. Index
279	180. Summary
280	181. Acknowledgements
281	182. Appendix
282	183. Glossary
283	184. Bibliography
284	185. Index
285	186. Summary
286	187. Acknowledgements
287	188. Appendix
288	189. Glossary
289	190. Bibliography
290	191. Index
291	192. Summary
292	193. Acknowledgements
293	194. Appendix
294	195. Glossary
295	196. Bibliography
296	197. Index
297	198. Summary
298	199. Acknowledgements
299	200. Appendix
300	201. Glossary
301	202. Bibliography
302	203. Index
303	204. Summary
304	205. Acknowledgements
305	206. Appendix
306	207. Glossary
307	208. Bibliography
308	209. Index
309	210. Summary
310	211. Acknowledgements
311	212. Appendix
312	213. Glossary
313	214. Bibliography
314	215. Index
315	216. Summary
316	217. Acknowledgements
317	218. Appendix
318	219. Glossary
319	220. Bibliography
320	221. Index
321	222. Summary
322	223. Acknowledgements
323	224. Appendix
324	225. Glossary
325	226. Bibliography
326	227. Index
327	228. Summary
328	229. Acknowledgements
329	230. Appendix
330	231. Glossary
331	232. Bibliography
332	233. Index
333	234. Summary
334	235. Acknowledgements
335	236. Appendix
336	237. Glossary
337	238. Bibliography
338	239. Index
339	240. Summary
340	241. Acknowledgements
341	242. Appendix
342	243. Glossary
343	244. Bibliography
344	245. Index
345	246. Summary
346	247. Acknowledgements
347	248. Appendix
348	249. Glossary
349	250. Bibliography
350	251. Index
351	252. Summary
352	253. Acknowledgements
353	254. Appendix
354	255. Glossary
355	256. Bibliography
356	257. Index
357	258. Summary
358	259. Acknowledgements
359	260. Appendix
360	261. Glossary
361	262. Bibliography
362	263. Index
363	264. Summary
364	265. Acknowledgements
365	266. Appendix
366	267. Glossary
367	268. Bibliography
368	269. Index
369	270. Summary
370	271. Acknowledgements
371	272. Appendix
372	273. Glossary
373	274. Bibliography
374	275. Index
375	276. Summary
376	277. Acknowledgements
377	278. Appendix
378	279. Glossary
379	280. Bibliography
380	281. Index
381	282. Summary
382	283. Acknowledgements
383	284. Appendix
384	285. Glossary
385	286. Bibliography
386	287. Index
387	288. Summary
388	289. Acknowledgements
389	290. Appendix
390	291. Glossary
391	292. Bibliography
392	293. Index
393	294. Summary
394	295. Acknowledgements
395	296. Appendix
396	297. Glossary
397	298. Bibliography
398	299. Index
399	300. Summary
400	301. Acknowledgements
401	302. Appendix
402	303. Glossary
403	304. Bibliography
404	305. Index
405	306. Summary
406	307. Acknowledgements
407	308. Appendix
408	309. Glossary
409	310. Bibliography
410	311. Index
411	312. Summary
412	313. Acknowledgements
413	314. Appendix
414	315. Glossary
415	316. Bibliography
416	317. Index
417	318. Summary
418	319. Acknowledgements
419	320. Appendix
420	321. Glossary
421	322. Bibliography
422	323. Index
423	324. Summary
424	325. Acknowledgements
425	326. Appendix
426	327. Glossary
427	328. Bibliography
428	329. Index
429	330. Summary
430	331. Acknowledgements
431	332. Appendix
432	333. Glossary
433	334. Bibliography
434	335. Index
435	336. Summary
436	337. Acknowledgements
437	338. Appendix
438	339. Glossary
439	340. Bibliography
440	341. Index
441	342. Summary
442	343. Acknowledgements
443	344. Appendix
444	345. Glossary
445	346. Bibliography
446	347. Index
447	348. Summary
448	349. Acknowledgements
449	350. Appendix
450	351. Glossary
451	352. Bibliography
452	353. Index
453	354. Summary
454	355. Acknowledgements
455	356. Appendix
456	357. Glossary
457	358. Bibliography
458	359. Index
459	360. Summary
460	361. Acknowledgements
461	362. Appendix
462	363. Glossary
463	364. Bibliography
464	365. Index
465	366. Summary
466	367. Acknowledgements
467	368. Appendix
468	369. Glossary
469	370. Bibliography
470	371. Index
471	372. Summary
472	373. Acknowledgements
473	374. Appendix
474	375. Glossary
475	376. Bibliography
476	377. Index
477	378. Summary
478	379. Acknowledgements
479	380. Appendix
480	381. Glossary
481	382. Bibliography
482	383. Index
483	384. Summary
484	385. Acknowledgements
485	386. Appendix
486	387. Glossary
487	388. Bibliography
488	389. Index
489	390. Summary
490	391. Acknowledgements
491	392. Appendix
492	393. Glossary
493	394. Bibliography
494	395. Index
495	396. Summary
496	397. Acknowledgements
497	398. Appendix
498	399. Glossary
499	400. Bibliography
500	401. Index

TABLE OF CONTENTS (Cont.)

Chapter		Page
APPENDIX B	The Teacher Opinion Questionnaire	302
APPENDIX C	The School Social Organization Questionnaire	306
APPENDIX D	The Principal Evaluation Questionnaire	310
APPENDIX E	The Teacher Satisfaction Questionnaire	313
APPENDIX F	The Means and Standard Deviation of the Emergent Interaction, Strength of the Sentiments of Friendship, Satisfaction and Principal Evaluation Scores for Each School	316
APPENDIX G	Mean Scores of Work Subgroups on the Professional Role Orientation Scale and on the Knowledge Oriented, Service Oriented, Core-Organizational, Colleague- Professional and Autonomy-Student Oriented Sub-scales	318
APPENDIX H	Mean Scores of Social Subgroups on the Professional Role Orientation Scale and on the Knowledge Oriented, Service Oriented, Core-Organizational, Colleague- Professional and Autonomy-Student Oriented Sub-scales	321

Page	Chapter
1	CHAPTER 1: Introduction to the Study of the History of the United States
10	CHAPTER 2: The Early Years of the United States
20	CHAPTER 3: The American Revolution and the Founding of the Nation
30	CHAPTER 4: The Early Republic and the Expansion of the Nation
40	CHAPTER 5: The Civil War and Reconstruction
50	CHAPTER 6: The Gilded Age and the Progressive Era
60	CHAPTER 7: The New Deal and the Second World War
70	CHAPTER 8: The Cold War and the Vietnam War
80	CHAPTER 9: The Reagan Revolution and the End of the Cold War
90	CHAPTER 10: The Clinton Years and the 9/11 Attacks
100	CHAPTER 11: The Bush Years and the War on Terror
110	CHAPTER 12: The Obama Years and the Economic Crisis
120	CHAPTER 13: The Trump Years and the 2020 Election

LIST OF TABLES

Table	Page
I. Split-Half Correlation and Estimated Whole Test Reliability for Pilot and Total Samples for the Final Form of the Professional Role Orientation Scale	129
II. Correlation Matrix for Sub-Scale and Total Scores on the Professional Role Orientation Scale	130
III. Correlation Matrix for Sub-Scale and Total Scores on the Professional Role Orientation Scale	131
IV. Principal-Axis with a Varimax Rotation Factor Solution for the Professional Role Orientation Scale	133
V. Principal-Axis with a Varimax Rotation Factor Solution for the Professional Role Orientation Scale (Five Factor Field)	138
VI. Distribution of Sample Schools by Staff Size and Returns	160
VII. Means, Variances, and Standard Deviations of Professional Role Orientation Scores for Individual Schools	161
VIII. Analysis of Variance of Professional Role Orientation Scores Among Schools Classified on the Basis of Quartile Groups and a Newman-Keuls Comparison Between Ordered Means	163
IX. Analysis of Variance of Professional Role Orientation Scores Classified on the Basis of Within School Quartile Groups and a Newman-Keuls Comparison between the Ordered Means for Each School	164

LIST OF TABLES (Cont.)

Table	Page
X. Analysis of Covariance of Perceived Rate of Emergent Interaction Scores Classified on the Basis of Among Schools Professional Role Orientation Quartile Groups with Size of School as Covariate and a Newman-Keuls Comparison of Ordered Means	167
XI. Analysis of Covariance of Attributed Rate of Emergent Interaction Scores Classified on the Basis of Among Schools Professional Role Orientation Quartile Groups with Size of School as Covariate and a Newman-Keuls Comparison of Ordered Means	168
XII. Correlations between Professional Role Orientation Scores and Perceived and Attributed Rate of Interaction Scores for Individuals in Each School and for Total Sample	170
XIII. Analysis of Variance of Perceived Rate of Interaction Scores Classified on the Basis of Within School Professional Role Orientation Quartile Groups and a Newman-Keuls comparison between the Ordered Means for Each School	173
XIV. Analysis of Variance of Attributed Rate of Interaction Scores Classified on the Basis of Within School Professional Role Orientation Quartile Groups and a Newman-Keuls Comparison Between the Ordered Means for Each School	174
XV. Analysis of Covariance of Perceived Rate of Emergent Interaction Scores for the Total Sample Classified on the Basis of Within School Professional Role Orientation Quartile Groups with Size of School as Covariate and a Newman-Keuls Comparison of Ordered Means	175

LIST OF TABLES (Cont.)

Table		Page
XVI.	Analysis of Covariance of Attributed Rate of Emergent Interaction Scores for the Total Sample Classified on the Basis of Within School Professional Role Orientation Quartile Groups with Size of School as Covariate and a Newman-Keuls Comparison of Ordered Means.	176
XVII.	Analysis of Variance of School Strength of Sentiment Scores Classified on the Basis of Among School Professional Role Orientation Quartile Groups and a Newman-Keuls Comparison between Ordered Means	180
XVIII.	Correlations between Professional Role Orientation and Strength of Sentiment Scores for Individuals in Each School and for Total Sample	182
XIX.	Analysis of Variance of School Strength of Sentiment Scores Classified on the Basis of Within School Professional Role Orientation Quartile Groups and a Newman-Keuls Comparison Between Ordered Means	183
XX.	Kruskal-Wallis Analysis of Variance of the Size of School Professional Role Orientation Scale Score Variances Classified on the Basis of Quartile Groups Among Schools on the Professional Role Orientation Scale	189
XXI.	Spearman Rank Correlations between Professional Role Orientation and Social Esteem Ranks for Individuals in Each School	192
XXII.	Kruskal-Wallis Analysis of Variance of Social Esteem Ranks Classified on the Basis of Within School Professional Role Orientation Quartile Groups.. . . .	194

LIST OF TABLES (Cont.)

Table	Pages
XXIII. Analysis of Variance of School Cohesiveness Scores Classified on the Basis of Among School Quartile Groups on the Professional Role Orientation Scale and a Newman-Keuls Comparison between Ordered Means	198
XXIV. Spearman Rank Correlations between the Technical Esteem and Professional Role Orientation of Individuals Within Each School	201
XXV. Kruskal-Wallis Analysis of Variance of Technical Esteem Ranks Classified on the Basis of Within School Quartile Groups on the Professional Role Orientation Scale	203
XXVI. Spearman Rank Correlations between Technical Esteem and Perceived and Attributed Rate of Interaction Ranks for Individuals in Each School	205
XXVII. Spearman Rank Correlations between Social Esteem and Perceived and Attributed Rate of Inter- action Ranks for Individuals in Each School	208
XXVIII. Spearman Rank Correlations Between Technical and Social Esteem Rank of Individuals Within Each School	212
XXIX. Analysis of Variance of Professional Role Orientation Scale Scores Classified on the Basis of Work Subgroup Membership and a Newman-Keuls Comparison Among the Means for Subgroups within Each School	221
XXX. Analysis of Variance of Professional Role Orientation Scale Scores Classified on the Basis of Social Subgroup Membership and a Newman-Keuls Comparison Among the Means for Subgroups Within Each School	222

LIST OF TABLES (Cont.)

Table	Page
XXXI. Analysis of Variance of Knowledge Orientation Sub-Scale Scores Classified on the Basis of Work Subgroup Membership and a Newman-Keuls Comparison Among the Means for Subgroups Within Each School	224
XXXII. Analysis of Variance of Service Orientation Sub-Scale Scores Classified on the Basis of Work Subgroup Membership and a Newman-Keuls Comparison Among the Means for Subgroups Within Each School	225
XXXIII. Analysis of Variance of Core-Organizational Orientation Sub-Scale Scores Classified on the Basis of Work Subgroup Membership and a Newman-Keuls Comparison Among the Means for Subgroups Within Each School	226
XXXIV. Analysis of Variance of Colleague-Profession Orientation Sub-Scale Scores Classified on the Basis of Work Subgroup Membership and a Newman-Keuls Comparison Among the Means for Subgroups Within Each School	227
XXXV. Analysis of Variance of Client-Autonomy Orientation Sub-Scale Scores Classified on the Basis of Work Subgroup Membership and a Newman-Keuls Comparison Among the Means for Subgroups Within Each School	228
XXXVI. Analysis of Variance of Knowledge Orientation Sub-Scale Scores Classified on the Basis of Social Subgroup Membership and a Newman-Keuls Comparison Among the Means for Subgroups Within Each School	230
XXXVII. Analysis of Variance of Service Orientation Sub-Scale Scores Classified on the Basis of Social Subgroup Membership and a Newman-Keuls Comparison Among the Means for Subgroups within Each School	231

LIST OF TABLES (Cont.)

Table	Page
XXXVIII. Analysis of Variance of Core-Organization Orientation Sub-Scale Scores Classified on the Basis of Social Subgroup Membership and a Newman-Keuls Among the Means for Subgroups Within Each School	232
XXXIX. Analysis of Variance of Colleague-Profession Orientation Sub-Scale Scores Classified on the Basis of Social Subgroup Membership and a Newman-Keuls Comparison among the Means for Subgroups within Each School	233
XL. Analysis of Variance of Client-Autonomy Orientation Sub-Scale Scores Classified on the Basis of Social Subgroup Membership and a Newman-Keuls Comparison among the Means for Subgroups within Each School	234
XLI. Chi-Square Comparison of Observed and Expected Frequencies in the Bottom Quartile of the Social Esteem Structures	236
XLII. Pearson Product-Moment Correlations between Satisfaction and Professional Role Orientation Scores within Each School and Total Sample	239
XLIII. Analysis of Variance of Satisfaction Scores Classified on the Basis of Within School Quartile Groups on the Professional Role Orientation Scale for Each School and Over All Schools Plus Newman-Keuls Comparisons Among Ordered Means	240
XLIV. Pearson Product-Moment Correlations between Satisfaction and Perceived and Attributed Rate of Interaction and Strength of Sentiment Scores Within Each School	244

LIST OF TABLES (Cont.)

Table		Page
XLV.	Spearman Rank Correlations between Teacher Satisfaction and Technical and Social Esteem	245
XLVI.	Analysis of Variance of Principal Evaluation Scores Classified on the Basis of the Quartile Groups of the Principals' Professional Role Orientation Scale Scores with a Newman-Keuls Comparison Among Ordered Means	249
XLVII.	Pearson Product-Moment Correlations between Teacher Professional Role Orientation Scale Scores and the Scores Granted on the Principal Evaluation Questionnaire for Each School and Total Sample	251
XLVIII.	Analysis of Variance of Principal Evaluation Scores Classified on the Basis of Within Schools Quartile Groups on the Professional Role Orientation Scale with Newman-Keuls Comparisons Among Means for Each School and Over All Schools	252
XLIX.	Analysis of Variance of Principal Evaluation Scores Classified on the Basis of Among Schools Quartile Groups on the Professional Role Orientation Scale with a Newman-Keuls Comparison between Ordered Means.	254

LIST OF FIGURES

Figure		Page
1.	Work Group Behavior	47

CHAPTER I

THE PROBLEM

I. INTRODUCTION

The students of organizations and organizational theory have become increasingly concerned with two developments. The first development has been the result of a change in the phenomenon under study. This modification has been the rise in importance of the professional person and the professionalization of occupational groups in the organization. The second development has been a product of the research on organizational behavior. The findings have shown that the social structure of the work group is a major determinant of organizational effectiveness and efficiency.

For the organization the rise in importance of the professions and the process of professionalization is a twentieth century development. The recognition of the emergence of the professions as an important element has led Talcott Parsons to state the following:

Comparative study of the social structures of the most important civilizations shows that the professions occupy a position of importance in our society which is, in any comparable degree of development, unique in history. . . . it seems evident that many of the most important features of our society are to a considerable extent dependent on the smooth functioning of the professions.¹

Not only have the recognized professions gained in moment but, as Lee Laylor has pointed out, the professionalization of other occupational groups can be described as "one of the most striking characteristics of contemporary

¹Talcott Parsons, Essays in Sociological Theory, p. 34.

occupational organization."² An appreciation of these developments has led Etzioni to state some propositions about their effects on certain aspects within the organization, and, on the basis of these propositions, he has developed a typology of organizations.³ Lieberman has noted that although these changes have been recognized and some implications for organizational administration have been drawn we still lack a sufficient knowledge of the factors that have brought about change⁴ and the actual effects of change on organizational behavior.⁵ In much the same vein, Hall has contended that the significance in studying professionalism lies in the character of social exchange and the resulting relationships that it elicits.⁶ In the light of these deficiencies, the purpose of this study has been to investigate the relationship between professionalism of teachers and the social structure of teacher groups.

The importance of the social structure of the work group for the

² Lee M. Laylor, "Professionalization: Its Functions and Dysfunctions for the Life Insurance Occupation," Social Forces, 38:110, Dec., 1959.

³ Amitai Etzioni, Modern Organizations, pp. 75-93.

⁴ Myron Lieberman, Education as a Profession, p. 7.

⁵ Ibid., pp. 484-487.

⁶ O. Hall, "The Place of Professions in the Urban Community", in Clark, S. D. (ed), Urbanism and the Changing Canadian Society, pp. 100-116.

organization was first demonstrated by the Western Electric study carried out by the Mayo group.⁷ They showed that workers did not respond simply as isolated individuals, but were strongly influenced by the social relations they experienced. These investigators also coined the term "informal organization," to point to the tendency of human beings, when thrown together in an organization, to develop relations with each other that were not specified by the formal organization. The Western Electric studies have sparked a series of investigations of work groups and the influence of these groups on organizational behavior. Festinger has provided us with a statement of the basic rationale for these studies:

Face-to-face group memberships do play an important role in shaping opinions and behavior patterns. Basic knowledge . . . about the determinants of group formation and functioning, how groups acquire and exert power over their members, and how groups provide satisfaction for their members should throw light in a wide variety of everyday problems.⁸

This study has been a further effort in this direction.

Statement of the Problem

The purpose of this study was to investigate the relationship between the professionalism of teachers and the social structure of teacher groups. The contention that professionalism was related to the social structure has been tested by ascertaining the correlation of the values associated with a professional role orientation with the following: (1)

⁷ For the major research report on the studies, see F. J. Roethlisberger and W. J. Dickson, Management and the Worker. Cambridge: Harvard University Press, 1939.

⁸ Leon Festinger, Stanley Schachter, and Kurt Back, Social Pressures in Informal Groups. pp. 176-177.

the rate of emergent interaction, (2) the strength of the within group sentiments of friendship, (3) the nature of the technical and social esteem structures, (4) the consensus on professional role orientation, (5) the level of cohesiveness, (6) the formation of subgroups, (7) group membership and (8) teacher satisfaction. In brief, it has been an attempt to determine if the values associated with professionalism form the "in-group" or dominant values of teacher groups.⁹

II. IMPORTANCE OF THE STUDY

The importance of this study rests upon the data it is able to provide for a better understanding of the relationships among the professionalism of teachers, the social structure of teacher groups, and the organizational requirements of control, communication, production and teacher satisfaction.

The Need for Professionalism Among Teachers

The need for teachers to possess a professional role orientation is self-evident. The teacher's task, characterized by unique situations, intimate relationships, low visibility, ad hoc co-operation and planning, and extra-organizational demands¹⁰, plus the nature of the times, charac-

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These values are dominant or "in-group" in that they serve as determinants of the social structure. See A. Zalesnik, C. R. Christensen, and R. J. Roethlisberger, The Motivation, Productivity, and Satisfaction of Workers: A Prediction Study, p. 210.

10

For a discussion on the division of labour and the structural looseness of school systems, and its concomitant need for professional teachers, see Charles E. Bidwell, "The School as a Formal Organization," in James G. March (ed.), Handbook of Organizations, pp. 972-1022.

terized by the tremendous increase in knowledge, the development of new professional techniques, and the expansion and evolution of the purposes of public education, requires that the teacher possess a high degree of professionalism. Information that gives some insights into factors that foster the professionalization of teachers will be of importance for administrators of teacher training programs and practicing school administrators.

Professionalism and the Social System.

The importance of the face-to-face group and its social structure in shaping attitudes and in socializing the neophyte into the organization or profession has been well documented. Knowledge about the following has been found helpful in understanding how the face-to-face group acts as a determiner of attitudes and ideologies: (1) the development of group standards, (2) the part played by social interactions in their development and the nature of these interactions, (3) the manner in which group standards are enforced and maintained, and (4) the motivation and attitudes possessed by the individuals entering the group.

The "socialization process" has been described as "an interactional process whereby a person's behavior is modified to conform to expectations held by members of the group to which he belongs."¹¹ Zaleznik and Moment have pointed out that the socialization process and the transfer of culture have one important aim - - "the training of the person to govern

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Paul F. Secord, and Carl W. Backman, Social Psychology, p. 523.

his behavior according to standards that have their origin in the society and the group."¹² Securing the efforts of individuals to behave in a manner complementary to these standards in large part depends on the individual adopting the objectives as personal standards. Greenwood has described the importance of the socialization process for the professionalization of newcomers in the following manner:

To succeed in his chosen profession, the neophyte must make an effective adjustment to the professional culture. Mastery of the underlying body of theory and acquisition of the technical skills are in themselves insufficient guarantees of professional success. The recruit must also become familiar with and learn to weave his way through the labyrinth of the professional culture. Therefore, the transformation of a neophyte into a professional is essentially an acculturation process wherein he internalizes the social values, the behavior norms, and the symbols of the occupational group. . . . The poorly acculturated colleague is a deviant; he is regarded as "peculiar", "unorthodox", and "annoying", and in extreme cases a "troublemaker." ¹³

It can be seen from this statement that the association of professional colleagues plays an essential role in the acculturation and socialization processes, and these processes help determine group structure. Since socialization is an interactional process and since the power of an occupational group to socialize its new members depends, in part, upon

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Abraham Zaleznik, and David Moment, The Dynamics of Interpersonal Behavior, p. 96.

13

Ernest Greenwood, "Attributes of a Profession," in Sigmund Nosow and William H. Form (eds.), Man, Work and Society: A Reader in the Sociology of Occupations, p. 216.

the first of these is the fact that the government is not a unitary body. It is a collection of different departments, each of which has its own interests and its own policies. This is a problem because it means that the government is not always able to act in a coordinated way. The second of these is the fact that the government is not always able to act in a timely way. It is often slow to respond to the needs of the people, and this can lead to a loss of confidence in the government. The third of these is the fact that the government is not always able to act in a fair way. It is often biased in favour of the interests of the ruling class, and this can lead to a loss of confidence in the government.

There are three main reasons why the government is not a unitary body. The first is the fact that the government is not always able to act in a coordinated way. The second is the fact that the government is not always able to act in a timely way. The third is the fact that the government is not always able to act in a fair way. These three reasons are the main reasons why the government is not a unitary body. The first reason is the fact that the government is not always able to act in a coordinated way. The second reason is the fact that the government is not always able to act in a timely way. The third reason is the fact that the government is not always able to act in a fair way.

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the intensity and extensiveness of its interaction with these members,¹⁴ then an analysis of the interactional patterns of teachers should shed some light on the process of social conditioning and social control in teacher groups.

Not only does the social structure hold significance for professionalism but professionalism may hold significance for the social structure. Zaleznik, Christensen and Roethlisberger have shown that it is possible to predict, with a fair degree of accuracy, the social structure of a work group when one knows the physical layout of the department, the work flow and task interdependence, the pay system, plus certain personal factors that the worker brings into the group such as age, sex, education and ethnic identification.¹⁵ They found that the dominant or "in-group" value of the group served as the major determinant of group membership and total status.¹⁶

Bidwell and others have conceived of the teachers in a school as forming "a close-knit colleague group, with a distinctive subculture

14

For findings relating the nature of the interactions to the socialization process, see E. Havemann and Patricia West, They Went to College: The College Graduate in America Today. New York: Harcourt, Brace, 1952; Secord and Backman, op. cit., pp. 548-549; M. H. Kuhn, "Self Attitudes by Age, Sex, and Professional Training," Sociological Quarterly, 1: 39-55, 1960; and Mary J. Huntington, "The Development of a Professional Self-Image," in R. K. Merton, G. G. Reader and Patricia Kendal (eds.), The Student-Physician, pp. 179-187.

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Zaleznik, Christensen and Roethlisberger, op. cit., p. 210.

16

Ibid., pp. 209-214.

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organized around the professional norms of teaching."¹⁷ Since these professional norms are not clearly defined and are multi-dimensional, then they are subject to various interpretations and emphases. If, as some writers report,¹⁸ attitudinal similarity fosters group membership and subgroup formation, then we would expect that the subgroup structuring of the social system within the school would parallel these dimensions or emphases. If these norms form the "in-group" value for teachers then data obtained from studies of the social properties of "professional norms of teaching" can be used to predict certain aspects of social structure and their effects on individual teachers.

Professionalism, the Social Structure and the Organization

Zaleznik has stated the following justification for studying interpersonal relations, factors influencing them and their influence on the organization:

The knowledge to be gained from future investigations will contribute to the evolution of organization theory and simultaneously to the education of organizational practitioners for whom interpersonal relations remain the area for development and exercising their personal competencies.¹⁹

17

Bidwell, op. cit., p. 979.

18

See Theodore M. Newcomb, Ralph H. Turner and Philip E. Converse, Social Psychology: The Study of Human Interaction, pp. 316-321.

19

Abraham Zaleznik, "Interpersonal Relations in Organizations," in March (ed.), op. cit., p. 611.

The writer feels that this study will have special pertinence for an increased understanding of the influence of professionalism on authority structures and on control, communication, productivity and satisfaction.

Authority Structures and Control. The exercise of authority is a requisite for the effective functioning of a modern organization. It enables the organization to co-ordinate activities, achieve expertise in task performance and decision-making, and to divide and fix responsibilities. Katz and Kahn have provided us with the following definition of authority:

By authority we mean simply legitimate power, power which is vested in a particular person or position, which is recognized as so vested, and which is accepted as appropriate not only by the wielder of power but by those over whom it is wielded and by the other members of the system.²⁰

If this definition is accepted it becomes evident that the effectiveness of an authoritative act is dependent upon its legitimacy and basis of power.

Peabody has presented a typology of authority that alludes to a possible influence of professionalism on authority structures.²¹ He has differentiated "formal authority" from "functional authority." This distinction has been made in the following manner:

The bases of formal authority - - legitimacy, position, and the sanctions inherent in office - - need to be distinguished from

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Daniel Katz and Robert Kahn, The Social Psychology of Organizations, p. 203.

21

Robert Peabody, "Perceptions of Organizational Authority: A Comparative Analysis." Administrative Science Quarterly, 6: 463-482, March, 1962.

The United States has long been a leader in the development of the world's most advanced technologies. This is due to the country's commitment to research and development, its highly skilled workforce, and its strong intellectual property laws.

These factors have enabled the United States to maintain its position as a global leader in innovation.

In addition, the United States has a long history of attracting foreign investment, which has helped to fuel its economic growth and technological advancement.

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the sources of functional authority, most notably, professional competence, experience, and human relations skills, which support or compete with formal authority.²²

The fact that these two forms of authority may not rest with the same person may cause potential threats to the bureaucratic authority relationship. Bennis has pointed out that this situation can be further complicated by the fact that functional authority can be subdivided and all these bases may not rest with the same person.²³ A factor fostering this fragmentation has been the growth in the complexity of organizations and their tasks. This growth in complexity has forced the formal position holder to be a generalist and hence he has been denied the legitimation of expertise within most of the functional areas that he has the responsibility of supervising.²⁴ Peabody has described the inherent danger of this situation in the following manner:

In a given superior-subordinate relationship, it is the superior's lack of functional authority or the subordinate's possession of greater competence, experience, or personal skills which tends to undermine formal authority.²⁵

²² Ibid., pp. 465-466.

²³ Warren Bennis, "Leadership Theory and Administrative Behavior: The Problem of Authority," Administrative Science Quarterly, 4:289, March, 1960.

²⁴ Robert Presthus, "Authority in Organizations," Concepts and Issues in Administrative Behavior, p. 129.

²⁵ Peabody, op. cit., p. 466.

Robinson has pointed out that this problem becomes especially acute in a professional organization due to the professional's perception of the criterion for determining the legitimacy of the power base:

The notion of hierarchical authority is not central to a professional ideology. In a bureaucracy the superior has the "right to the last word" because he is the superior; in professional matters the last word belongs to he who possesses superior professional competence.²⁶

This bifurcation of authority and the difference between the bureaucrat and the professional in orientation towards authority could be a source of organizational strain. Selznick has noted that under such periods of strain informal groups form as countervailing forces oriented in opposition to the administration.²⁷

In the school the principal occupies the position interstitial to the central administrative hierarchy and the professional group of teachers. He is called upon to satisfy the demands of the administration, based on administrative authority, and yet maintain the equilibrium in his own group of teachers that identify with professional authority. The achievement of legitimacy under both norms may not always be possible.

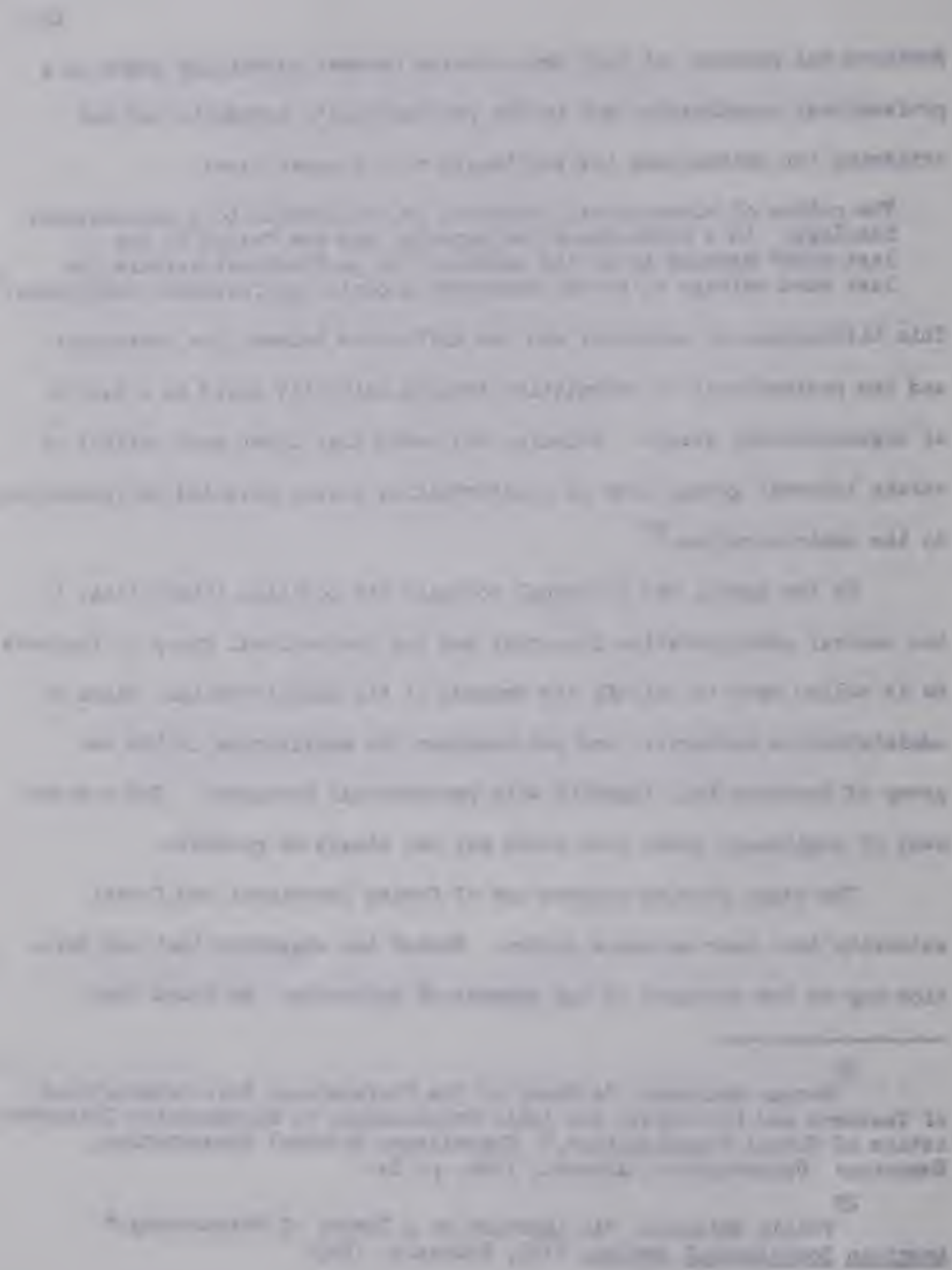
The basic problem becomes one of fusing functional and formal authority into some workable system. Becker has suggested that one solution may be the division of the spheres of authority. He found that

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Norman Robinson, "A Study of the Professional Role Orientations of Teachers and Principals and their Relationship to Bureaucratic Characteristics of School Organizations," Unpublished Doctoral Dissertation, Edmonton: University of Alberta, 1966. p. 29.

27

Philip Selznick, "An Approach to a Theory of Bureaucracy," American Sociological Review, 8:51, February, 1943.



teachers in the Chicago schools delineated the areas that the principal could exercise authority legitimately and that they prescribed the type of behavior they expected him to exhibit in the areas reserved for teachers.²⁸ They expected autonomy in the area of curriculum and instruction. The principal, when acting in a supervisory capacity in these areas, was expected to act as a colleague and base his supervision of instruction on professional competence, giving constructive criticism rather than orders. He reported that if the principal failed to act in the expected manner the teachers relied on the power of the colleague group and exercised such sanctions as ignoring the principal, or group requests for transfer, or a line of passive resistance. Trask found that principals realized these expectations and varied their supervisory practice according to the perceived professional competence of their teachers.²⁹ Carlson found that the superintendents under study varied their exercise of authority along an official-collegial dimension depending on the professional status of the people involved.³⁰ This evidence suggests that the practicing administrators are attempting to solve the problem in the manner suggested by Parsons -- the transference of administrative authority from the basis

28

Howard Becker, "The Teacher in the Authority System of the Public School," Complex Organizations, pp. 243-251.

29

Ann Trask, Supervision in the School: An Exploratory Study, p. 84.

30

R. O. Carlson, Executive Succession and Organizational Change, pp. 30-38.

of official superordination to that of senior colleague status and informal leader.³¹

An analysis of the social structure of schools should yield information about the location of the administrative personnel within the structure, the relationship between the professionalism of the staff and this positioning, and the relationship between the professional role orientation of principals and their placement within the social system.

If the granting of more autonomy to teachers creates a debureaucratization of authority and a "structural looseness" in the school organization, then we must rely on the social controls of the teacher colleague group and the internalized norms of professionalism for internal coordination and control.³² The thought is that with an increase in social control and internalization of norms there should be a reduction in the need for superordinate control.

Zaleznik and Moment have noted some of the factors determining the strength of the group's control over the individual members:

. . . Social control results from the interdependence of four main elements: (1) norms of behavior, (2) a system of rewards and punishments, (3) a system of ranking, and (4) the predisposition of members to conform. These elements may be viewed as variables contributing to the effectiveness of control in groups. A highly

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T. Parsons, "Introduction", The Theory of Social and Economic Organizations, pp. 59-60.

³²

Bidwell, op. cit., pp. 1013-1015.

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developed system of norms supported by a complex system of rewards and a stable ranking structure would produce powerful group forces promoting standardized behavior. These forces combined with strong predispositions of members to conform would result in a tightly controlled social situation.³³

Festinger observed that the power of the group over the individual was primarily dependent upon the extent that the member was attracted to and identified with the group.³⁴ He found that group cohesiveness, the total of these forces of attraction and identification for all members, determined the "strength of norms" in exerting influence on the behavior of group members.

It would appear that the desired state for social control in the school would be a cohesive staff that had the professional norms of teaching as its "in-group" or central value. Since these norms of professionalism have the orientation toward colleagues as a dimension, one would expect that these norms enhance cohesiveness and social control. A determination of the relationship among the professional orientation of staff members and cohesiveness and other elements of the social structure should present some insights into the nature and strength of the informal authority structures and the need for superordinate control.

Communication. In the preceding discussion it was noted that the autonomous nature of the teachers' tasks and the professional role orientation of teachers dictate against the use of and heavy reliance on hierarchical authority, rules and regulations for control and coordination.

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Zaleznik and Moment, op. cit., p. 102.

³⁴

Leon Festinger, "Group Attraction and Membership" in Group Dynamics, D. Cartwright and A. Zander (eds.), pp. 92-101.

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As team teaching and other group teaching practices are introduced one can expect greatly increased horizontal work flows and functional groupings that make teachers much more interdependent and less dependent on the principal. With these two conditions and the increase in interdependence and independence the communication processes within the professional sector of the school system can be expected to assume special importance and, depending on the extent that social control measures are used, develop in a distinctive form. Outlining this relationship between authority and communication, Zaleznik and Moment have stated:

In real organizations the authority structure cannot be separated from the communication structure; they become one when informal authority and communication are included in the analysis.³⁵

From this it follows that the communication-interaction network can be considered the most significant structural property of a group. The factors influencing and determining this network become highly important and worthy of study.

Production and Satisfaction. The justification for any study in the field of administration must eventually fall back on the degree to which the study will reveal new information pertaining to production and worker satisfaction. Since the production of almost all goods and services involves small groups operating in some organizational setting then the manner in which these groups of workers influence the quality and quantity of output and the satisfactions that the groups and individuals

³⁵ Zaleznik and Moment, op. cit., p. 295.

derive from the output and from each other becomes significant. Zaleznik, Christensen, and Roethlisberger, after a review of the research, reached the conclusion that the investigators of worker motivation, productivity and satisfaction have repeatedly revealed that five elements have been found important for the effectiveness of a group and the individual productivity and satisfaction of its members:

1. The technical organization of the group,
2. The social structure of the group,
3. The individual task motivation, i.e., the willingness to work hard that each member brings to and maintains toward his job,
4. The rewards he receives from doing this job, and
5. The satisfactions he obtains from being an accepted member of a group.³⁶

This study has investigated the relationships among the professional role orientation of teachers, the social structure of teacher groups, and teacher satisfaction. Although productivity has not been specifically investigated undoubtedly some of the data will have output implications.

From the foregoing it can be seen that a study of the relationship between the professionalism and the social structure of teacher groups has both theoretical and practical significance for administrators especially in the area of the organizational requirements for control, communication, production and teacher satisfaction.

III. DEFINITION AND DESCRIPTION OF TERMS

The following terms and concepts are basic to the discussion and

propositions presented in this study:

Profession. The writer has adopted that definition of "profession" enunciated by Cogan³⁷ and extended by Hrynyk:

A profession is a vocation whose members collectively believe that: (a) its "practice is founded on an understanding of the theoretical structure in some department of learning or science, and upon the abilities and skills which accompany such understanding" (p.49). (b) Its primary ethical principle is that it has a duty to offer its unique service for the welfare of the client and society, (c) It involves special relationships of identification, affiliation and loyalty among the members who practice it, (d) It involves special relationships with the persons it serves and with society, (e) It is regulated by a formal organization which has as its concern the welfare of society as well as of its members. The expectation of society is that a vocation must satisfy this system of beliefs to be classed as a profession.³⁸

Professionalism. Professionalism has been defined as "the ideology and associated activities related to a profession".³⁹

Professionalization. This term refers to the process whereby occupational groups or members of such groups acquire the characteristics associated with a profession.

Group or Social Structure. Zaleznik and Moment have defined group or social structure as:

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Morris L. Cogan, "Toward a Definition of Profession," Harvard Education Review, 23: 33-50, Winter, 1953.

³⁸

Nicholas P. Hrynyk, "Correlates of Professional Role Orientation in Teaching," unpublished doctoral dissertation, University of Alberta, Edmonton, pp. 29-30

³⁹Ibid., p. 20.

. . . the properties of a group which result from the interaction of its members and which can be observed and measured.

Since group structure results from the interaction of members, it becomes the representable and recurrent pattern of relationships through which group activities are channeled.⁴⁰

In this study this has been seen as including "the particular pattern of interactions, activities, sentiments, norms, and values that uniquely characterize the group's behavior."⁴¹ The pattern of attraction and aversion among the group members has been referred to as the affect structure.

Teacher group. A teacher group includes all the members of a school staff holding a teacher's certificate.

Subgroup. A subgroup has been defined as a "cluster of members who interact socially more with one another than with other members of the group."⁴² The process of subgroup development has often been referred to as clique formation -- no distinction has been made here between sub-groups and cliques.

Cohesiveness. This term was originally defined by Festinger, Schachter and Back as "the total field of forces which act on members to remain in the group."⁴³ Zaleznik and Moment have restated the definition in terms more closely allied to exchange theory:

⁴⁰ Abraham Zaleznik and David Moment, op. cit., p. 67.

⁴¹ Zaleznik, Christensen, and Roethlisberger, op. cit., p. 7.

⁴² Zaleznik and Moment, op. cit., p. 69.

⁴³ Festinger, Schachter and Back, op. cit., p. 164.

Group cohesiveness refers to the attractiveness of the group to its members, their willingness to participate in its activities, and the extent to which they see themselves being rewarded potentially by their experiences in the group.⁴⁴

Since cohesiveness has been defined in terms of the reward-cost outcomes and since the writer has also defined individual satisfaction in these same terms, then he has conceived of cohesiveness as being the average level of satisfaction derived from the group by its members.

Esteem. The writer has defined esteem as a position of worth that a person is granted by fellow members of a group due to some expressed activities and characteristics that are judged valuable according to the values of that group. Esteem granted on the basis of perceived level of competence or skill has been call technical esteem and that based on the ability to satisfy social needs has been called social esteem.

Satisfaction. This term refers to the gratification of needs or the receipt of favourable reward-cost outcomes from social interactions. The level of satisfaction expressed by teachers in this study has been with respect to their social and work situation within the school.

The following terms and concepts are basic to the propositions outlined by Homans and the model presented in Figure 1:

Activities. Homans has used the term in much the same way that it

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Zaleznik and Moment, op. cit., p. 355.

On the other hand, the fact that the majority of the population is still illiterate, and that the majority of the population is still illiterate, is a fact that is not to be overlooked.

It is a fact that the majority of the population is still illiterate, and that the majority of the population is still illiterate, is a fact that is not to be overlooked.

Section 1. The first and most important fact is that the majority of the population is still illiterate.

A further fact is that the majority of the population is still illiterate, and that the majority of the population is still illiterate, is a fact that is not to be overlooked.

Section 2. The second and most important fact is that the majority of the population is still illiterate, and that the majority of the population is still illiterate, is a fact that is not to be overlooked.

The third and most important fact is that the majority of the population is still illiterate, and that the majority of the population is still illiterate, is a fact that is not to be overlooked.

Section 3. The fourth and most important fact is that the majority of the population is still illiterate, and that the majority of the population is still illiterate, is a fact that is not to be overlooked.

is used in everyday speech. He has stated that it refers "in the end to movements of the muscles of men" or what a person does.⁴⁵ Referring to an exchange relationship he has stated "in the exchange between Person and Other we shall refer to giving help and giving approval as two different activities."⁴⁶ Dividing activities by their source he has described given activities as those "activities demanded by the job," and emergent activities as those "activities spontaneously evolved that serve to express the attitudes of persons toward one another."⁴⁷

Interaction. Homans has defined interaction in the following manner:

. . . when an activity (or sentiment) emitted by one man is rewarded (or punished) by an activity emitted by another man, regardless of the kinds of activity each emits we say that the two have interacted.⁴⁸

He has described given or required interaction as those "interactions required for co-ordination of practical activities," and emergent interaction as "interaction elaborated socially - - for fun, so to speak."⁴⁹

⁴⁵

George C. Homans, The Human Group (N.Y. : 1950), pp. 34-35.

⁴⁶

George C. Homans, Social Behavior: Its Elementary Forms (N.Y., 1961), p. 32.

⁴⁷

Homans (1950), op. cit., p. 110.

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Homans (1961), op. cit., p. 35.

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Homans (1950), loc. cit.

The first part of the paper is devoted to the study of the asymptotic behavior of the solutions of the system of equations (1) as $t \rightarrow \infty$. It is shown that the solutions of this system tend to zero as $t \rightarrow \infty$ if and only if the matrix A is negative definite. The second part of the paper is devoted to the study of the asymptotic behavior of the solutions of the system of equations (1) as $t \rightarrow \infty$ if the matrix A is not negative definite. It is shown that the solutions of this system tend to infinity as $t \rightarrow \infty$ if and only if the matrix A is not negative definite.

The authors are grateful to the referee for his valuable remarks.

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1. A. A. Krasovskii, *Stability of Motion*, Moscow, 1959.
 2. A. A. Krasovskii, *Stability of Motion*, Moscow, 1959.
 3. A. A. Krasovskii, *Stability of Motion*, Moscow, 1959.

In the present paper we shall study the asymptotic behavior of the solutions of the system of equations (1) as $t \rightarrow \infty$. It is shown that the solutions of this system tend to zero as $t \rightarrow \infty$ if and only if the matrix A is negative definite. The second part of the paper is devoted to the study of the asymptotic behavior of the solutions of the system of equations (1) as $t \rightarrow \infty$ if the matrix A is not negative definite. It is shown that the solutions of this system tend to infinity as $t \rightarrow \infty$ if and only if the matrix A is not negative definite.

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Sentiments. According to Homans, sentiments refer to "internal states of the human body."⁵⁰ This included all manner of things such as "drives, emotions, feelings, affective states, sentiments, attitudes".⁵¹ The category of "sentiments" has been broken into three subgroups: emergent, given and required. The emergent sentiments have been set forth by Homans as "dealing with sentiments developed on the job, such as liking or disliking for other persons . . . approval or disapproval of the things other persons do."⁵² Turner has described a given sentiment or value as "a belief or feeling which a member brings with him into a group because of his life outside it and his personal background."⁵³ To Turner required sentiments were "a belief or feeling which an employee must have in order to be willing to perform the task as assigned."⁵⁴

Norms. Homans originally presented the definition of a norm as:

. . . an idea in the minds of the members of a group, an idea that can be put in the form of a statement specifying what the members or other men should do, ought to do, are expected to do, under given circumstances. . . . A statement of the kind described is a norm only if any departure of real behavior from the norm is followed by some punishment.⁵⁵

⁵⁰ Ibid., p. 37.

⁵¹ George C. Homans, "Social Systems", in Joseph A. Litterer (ed.), Organizations: Structure and Behavior (N.Y.: 1963), p. 186.

⁵² Homans (1950), op. cit., p. 110.

⁵³ Arthur N. Turner, "A Conceptual Scheme for Describing Work Group Behavior," in Paul R. Lawrence, et. al. (eds.), Organizational Behavior and Administration, p. 215.

⁵⁴ Ibid.

⁵⁵ Homans (1950), op. cit., p. 123.

Most other statements defining a 'norm' are but modifications of this.

With the advent of 'exchange theory', Homans has modified his definition to read:

. . . we shall say that a norm is a statement made by some members of a group that a particular kind of quantity of behavior is one they find valuable for the actual behavior of themselves, and others whom they specify, to conform to. The important thing is not that the behavior is conformity but that it is valued.⁵⁶

This conforms with Gouldner who viewed norms of behavior as controls which governed exchanges in human interaction - - prescribing the permissible types of exchange, their quantities and relative net gains for individuals in given positions or statuses within the social structure.⁵⁷ In essence, it can be stated that norms are emergent sentiments that are shared and serve as rules affecting the relationships among the members of a group.

Givens or External System. The values of the activity, interaction and sentiment in a group are "initially determined by what we call the 'given' factors in the circumstances in which the group is placed. . ."⁵⁸

Homans has recognized three major classes of givens:

First, features of the physical or functional proximity of men to one another that makes them likely to enter into exchange. Second, features of the past histories, or background, of men that make them likely to hold similar values. And third, features

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Homans (1961), op. cit., p. 116.

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Alvin W. Gouldner, "The Norm of Reciprocity: A Preliminary Statement," American Sociological Review, 25: 171-177, April, 1960.

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Homans (1950), op. cit., p. 446.

of the position men hold outside the group in question that make them particularly well able to reward their fellow members with the group.⁵⁹

All are factors that are brought into the group or imposed on it from the outside, hence, they determine, in part, the relationship between the group and the environment and the survival of the group in that environment.

The writer would like to point out the term "external system" that appeared in Homans' original writings has been equated by him to the "givens" in his later writings. He has stated that he has dropped the two system approach and the use of the term "external system" because the givens did not always constitute a system -- the set of parts were not necessarily related to one another -- but the factors are givens in the sense that they are used in explanation but remain themselves unexplained."⁶⁰

Emergent or Internal System. The emergent or internal system can be thought of "as group behavior that is an expression of the sentiments towards one another developed by the members of the group in the course of their life together."⁶¹

Mutual Dependence. It was previously pointed out that mutual dependence described the condition among the elements of interactions, activities, and sentiments where a change introduced in one results in a

⁵⁹ Homans (1961), op. cit., p. 208.

⁶⁰ Ibid., pp. 230-231.

⁶¹ Homans (1950), op. cit., p. 110.

change in the other two. Whyte has pointed out we also assume a state of mutual dependence between the environment or the "givens" and the social system or the "emergent system" such that a change introduced into the environment will have its effects on the social system and vice versa.⁶²

Practical Equilibrium. The term 'practical equilibrium' describes the condition where the major influences of the environment have had their effect on the internal system and where the internal system has elaborated itself to the point where stability is achieved.⁶³ The influence process has had its effects and the group structures are well defined.

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William Foote Whyte, Men at Work, p. 569.

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See George Caspar Homans, Sentiments and Activities (N.Y.:1962), p. 284; and, Homans (1961), op. cit., pp. 112-113.

CHAPTER II

THEORETICAL BACKGROUND AND HYPOTHESES

I. GENERAL STATEMENT

The contention of this study has been that if the mean professional role orientation of a school staff and the orientation of the individual teachers are known one may be able to predict various group structures, describe the positions of individuals within these group structures and relate these to such administrative considerations as communications, authority structures and control, and teacher satisfaction. Homans' "Exchange Theory" has provided the theoretical basis for describing the nature and dynamics of this linkage between value orientation, social behavior and group structures. This theory has attempted to portray the motivational dynamics and social behavior of persons in dyadic relationships and how these relationships elaborate into the more complex group properties and structures. In the theoretical background for this study the writer has endeavoured to trace this development in teacher groups and to suggest the influence of the value orientation associated with professionalism on the 'mode of elaboration' and the resultant effects on the social structure of these groups.

In the development of the theoretical background and hypotheses the writer has first considered a description of the orientation of a professional and briefly discussed teaching as a singular profession.

Following this, an overview of exchange theory and a description of individual behavior basic to social interaction have been presented. The process of elaboration has been outlined and the effects of professionalism on the process and the resultant group structures have been hypothesized. This section has been concluded with a summary of these hypotheses.

II. PROFESSION, PROFESSIONALISM AND PROFESSIONALIZATION

The Dimensions of Professionalism

The descriptions of what constitutes the orientation of a professional person are many, and vary somewhat as to their inclusiveness and emphasis. For this study, the writer has adopted the statement put forward by Hrynyk.¹ He enunciated five dimensions that describe the attitudes, beliefs and relationships that would be held and exhibited by individuals that have the ideal total professional orientation. He has labelled these the (a) Knowledge and Skill, (b) Service Ideal, (c) Colleagues-Profession, (d) Autonomy-Client, and (e) Formal Organization dimensions.² Hrynyk has recognized that:

¹Nicholas P. Hrynyk, "Correlates of Professional Role Orientation in Teaching," unpublished doctoral dissertation, University of Alberta, Edmonton.

²Ibid., pp. 22A-25.

In addition, a low level of activity is observed in the presence of the inhibitor. The results of the experiments are shown in Table I. The data indicate that the inhibitor is effective in reducing the rate of polymerization. The effect of the inhibitor is more pronounced at higher temperatures. The results of the experiments are shown in Table II. The data indicate that the inhibitor is effective in reducing the rate of polymerization. The effect of the inhibitor is more pronounced at higher temperatures.

References

1. J. H. Duerksen, *Can. J. Chem.*, **34**, 1000 (1956).

The results of the experiments are shown in Table I. The data indicate that the inhibitor is effective in reducing the rate of polymerization. The effect of the inhibitor is more pronounced at higher temperatures. The results of the experiments are shown in Table II. The data indicate that the inhibitor is effective in reducing the rate of polymerization. The effect of the inhibitor is more pronounced at higher temperatures. The results of the experiments are shown in Table III. The data indicate that the inhibitor is effective in reducing the rate of polymerization. The effect of the inhibitor is more pronounced at higher temperatures. The results of the experiments are shown in Table IV. The data indicate that the inhibitor is effective in reducing the rate of polymerization. The effect of the inhibitor is more pronounced at higher temperatures. The results of the experiments are shown in Table V. The data indicate that the inhibitor is effective in reducing the rate of polymerization. The effect of the inhibitor is more pronounced at higher temperatures.

2. J. H. Duerksen, *Can. J. Chem.*, **34**, 1000 (1956).

The results of the experiments are shown in Table I. The data indicate that the inhibitor is effective in reducing the rate of polymerization. The effect of the inhibitor is more pronounced at higher temperatures. The results of the experiments are shown in Table II. The data indicate that the inhibitor is effective in reducing the rate of polymerization. The effect of the inhibitor is more pronounced at higher temperatures.

Received May 10, 1956

Perhaps no present day occupation has the total "ideal" orientation towards all five dimensions, but all occupations hold some degree of attitudes related to them. It also appears that different groups within a single occupation may vary in their orientation towards these dimensions. In other words, both among different vocations and among sub-groups within an occupational group, there may be different degrees of movement towards the "ideal type profession".³

Each of these dimensions have been discussed in turn.

(a) Knowledge and Skill. The following notions are central to this dimension: (a) the work performed is essentially intellectual in character and based on "an esoteric, theoretical body of knowledge;" (b) the work is directed "at the unique solution of problems of others"; (c) the required knowledge and skills are acquired through a long period of formal schooling; (d) the technical competence of practitioners has been formally tested and they are licensed; and (e) the onus is on the individual to maintain his skill and knowledge, and "to contribute to the extension of the body of knowledge on which his practice is based."⁴ The core of this dimension has been described as the professional's "beliefs about the practice of the occupation being based on skills acquired after study of an esoteric body of theoretical knowledge."⁵

³Ibid., pp. 31-32.

⁴Ibid., p. 12A.

⁵Ibid., p. 31.

(b) Service Ideal. The central elements of this dimension, according to Hrynyk, include the professional's "beliefs regarding the unique, indispensable, impartial, essential and altruistic nature of the vocation."⁶ The professional is seen as being committed to the occupation as a life-time career and to providing his services "Whenever the need arises and whatever the circumstances."⁷

(c) Colleague-Profession. The observation that professionals exhibit a strong sense of identification with their colleagues has led Hrynyk to include a 'colleague-profession' dimension as described in the following terms:

The notion of collegueship stresses the occupational unity of the participants in a profession. Strong identification and affiliation with the profession leads to a concern about who one's colleagues are. The "brotherhood" aspects of collegueship contribute to the social status and exclusiveness of the professions. Common interests lead to a group loyalty and loyalty of one practitioner to another not ordinarily found in other occupational groups.⁸

(d) Autonomy-Client. This area has been described in the following manner:

The peculiar relationships between a professional and his clients creates special attitudes toward autonomy in practicing his occupation. Clients, unable to perform or judge the work must place their trust in the practitioner. The responsibility in this fiduciary relationship leads the practitioner to demand freedom in making decisions related to the provision of his service.⁹

It would appear that this dimension has two main elements: (a) the

⁶Ibid.

⁷Ibid., p. 23.

⁸Ibid., p. 24.

⁹Ibid., pp. 24-25.

belief that the practitioner ultimately owes his service to the client, and (b) the belief that the practitioner must have autonomy in the areas associated with this service.

(e) Formal Organization. This last dimension forming the core of professional orientation has been identified as follows:

Beliefs regarding a formal organization which serves as the core for the professionalization of the occupation. This core-organization is concerned with the destiny of its members as well as with the way in which members serve the interests of society.¹⁰

Hrynyk saw the organization as performing the following functions for its members:

The organization becomes the enforcer of standards of conduct, codes of ethics and attempts to control licensure and admittance to the profession. . . . The organization speaks for the profession and provides opportunities for the growth of circles of collegueship.¹¹

In summary, Hrynyk has presented five dimensions that may be viewed as characteristic of the orientation of professional persons:

(1) Knowledge and Skill - - the professional's beliefs about the theoretical knowledge and skill bases of the profession; (2) Service Ideal - - the professional's beliefs regarding the unique, indispensable, impartial and altruistic nature of the profession; (3) Colleague-Profession - - the professional's beliefs about the occupation-

¹⁰Ibid., p. 31.

¹¹Ibid., p. 23.

that the two functions f and g are linearly independent. The linear independence of f and g is the basis for the construction of the functions f and g .

(b) *Linear Independence* The two functions f and g are linearly independent.

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$$f(x) = \cos(x)$$

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al unity of the participants and the need for cooperative, equalitarian and supportive behavior; (4) Autonomy-Client - - the professional's belief that his ultimate responsibility is for the welfare of the clients he serves, and the belief that the practitioner must have autonomy in the areas associated with this service; and (5) Formal Organization - - the professional's belief in the legitimacy and need for a formal organization of associates, and his positive identification with such an organization.

It must be remembered that the profession and the professionals do not have sole claim to these dimensions nor do they possess each of these dimensions to the same degree. As Carr-Saunders and Wilson have claimed:

. . . the typical profession exhibits a complex of characteristics, and that other vocations approach this condition more or less closely, owing to the possession of some of these characteristics fully or partly developed.¹²

Therefore the distinction between the profession and nonprofession is a qualitative and quantitative consideration.

A Typology of Professional Roles of Teachers

Hrynyk, recognizing that individual teachers will be more oriented towards one or more of these dimensions than towards the others, has proposed and described the following typology of teachers according to their

¹²A. M. Carr-Saunders and P. A. Wilson, The Professions, p.4.

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professional role orientation:

1. The Knowledge Oriented has an orientation which emphasizes the intellectual application of an esoteric body of knowledge and special skills towards the achievement of educational goals. He emphasizes the academic content of his subject field as well as the unique knowledge that is required for teaching.
2. The Service Oriented is oriented towards a service ideal and sees himself as providing a unique altruistic mission in society. This is accomplished through the provision of an impartial, indispensable educational service throughout his working life. He is primarily oriented to performing a service for students under his charge. He may see teaching as a means to the reconstruction of society.
3. The Core-Organizational focuses on the professional organization (the Alberta Teachers' Association) as his primary reference. He sees it as the enforcer of standards and voice of the profession but is likely to be more oriented to the organization rather than the professional movement it serves, except where the two coincide.
4. The Colleague-Professional stresses a strong identification with his fellow teachers and with belonging to the teacher occupational group.
5. The Autonomy-Student Oriented stresses the fiduciary nature of his relationship with students, the trust placed in him by society to achieve the goals of education and the autonomy he requires in applying his knowledge and skill to fulfill the demands of his trust.¹³

Professional Subgroup Formation

Many writers have questioned the view that a profession is a homogeneous group the members of which hold common values, expectations, attitudes and norms of behavior. Bucher and Strauss concluded that coalition and subgroup formation in the medical profession reflected

¹³Hrynuk, op. cit., pp. 37-38.

and stemmed from the differences in sense of mission, work activities, methodology and techniques, colleagues, interests and associations.¹⁴

This led them to conceive of a profession as being:

A loose amalgamation of segments pursuing different objectives in different manners and more or less delicately held together under a common name at a particular period in history.¹⁵

Rather than seeing the professions as federations, Carr-Saunders and Wilson hold the view that the subgroups of the professions are the product of a process of segmentation.¹⁶ According to them the following factors have fostered this fragmentation and the development of the multiple form of organization:

. . . (1) the presence of one or more distinct 'sub-crafts' within a profession, (2) differences of what may be termed 'professional status among the practitioners, (3) differences of economic status, (4) the factors of common employment, (5) the geographic factors, and (6) the antagonism of 'insiders' and 'outsiders.' Indeed two or more of these factors may be present simultaneously.¹⁷

Anderson¹⁸ and Lieberman¹⁹ have noted that education is not a unitary profession but a collectivity of related but different professions. As Lieberman has stated:

¹⁴Rae Bucher and Anslem Strauss, "Professions in Progress," American Journal of Sociology, 66: 325-334, January, 1961.

¹⁵Ibid., p. 326.

¹⁶Carr-Saunders and Wilson, op. cit., pp. 319-326.

¹⁷Ibid., p. 320.

¹⁸Archibald W. Anderson, "The Teaching Profession: An Example of Diversity in Training and Function," in National Society for the Study of Education, Education for the Professions, pp. 140-167.

¹⁹Myron Lieberman, The Future of Public Education, p. 76.

. . . teachers really constitute a number of highly diverse occupational groups. . . . instead of regarding teachers of all grade levels and all subjects as specialists within a single profession, we must regard them as a cluster of related but different professions.²⁰

If the profession of education is characterized by this clustering of various professions or is under the influence of the 'segmentation process', then one would expect the school staff, as a congeries, to reflect these divisions along some of the dimensions mentioned by Bucher and Strauss, and Carr-Saunders and Wilson. The formation of cliques and subgroups has been discussed later.

III. EXCHANGE THEORY AND ELEMENTARY SOCIAL BEHAVIOR

Since 'exchange theory' has provided a statement on the motivation and behavior of individuals basic to the social interaction upon which group structures are built, this part of the chapter has been devoted to a presentation of a general description of the theory and a more detailed look at some of the reinforcers. The concepts and descriptions contained herein have been utilized in the explanation of the mechanics of the process of elaboration and the influence of the professional role orientation on the process.

General Propositions

This theory has attempted to provide a basis for describing small-

²⁰Ibid.

group behavior in terms of individual behavior, dyadic relationships and exchange of values. A belief basic to the theory is that small-group behavior can be understood in terms of individual behavior. As Homans, the developer of the theory, has stated, "I reject as having no final truth . . . Durkheim's assertion that society was an entity sui generis and that sociology was not a corollary of psychology."²¹ He believes that "Sociology was, Durkheim to the contrary, a corollary of psychology,"²² and ". . . from the laws of individual behavior . . . follow the laws of social behavior when the complications of mutual reinforcement are taken into account."²³

Homans has drawn heavily from the fields of behavioral psychology and economics for the major elements of his theory.²⁴ He has seen interaction as "an exchange of goods, material and nonmaterial,"²⁵ and social interaction "as an exchange of activity, tangible or intangible, and more or less rewarding or costly, between at least two persons."²⁶

²¹George C. Homans, Sentiments and Activities, (N.Y., 1962), p. 29.

²²Ibid., p. 48.

²³George C. Homans, Social Behavior: Its Elementary Forms, (N.Y., 1961), p.30.

²⁴See G. C. Homans, "Human Behavior as Exchange," American Journal of Sociology, 63: 597-606, May, 1958; and Homans (1961), op. cit., p. 12.

²⁵Homans (1962), op. cit., p. 279.

²⁶Ibid., p. 292.

Making use of the findings of Skinner²⁷ on operant conditioning and on the effects of deprivation and satiation, Homans has envisaged human behavior as a function of the amount and kinds of rewards and punishments it fetches.²⁸ The unit of exchange in social interaction has been described as the minute action that, for one reason or another, individuals find rewarding -- these are referred to as 'values.'²⁹ Introducing the concept of profit from economics he has noted that interaction also involves costs and these costs limit the actions aimed at rewards:

For a person engaged in exchange, what he gives may be a cost to him, just as what he gets may be a reward, and his behavior changes less as profit, that is, reward less cost, tends to a maximum. . . . The cost and the value of what he gives and of what he gets vary with the quantity of what he gives and gets.³⁰

Utilizing the concepts of satiation and marginal utility, Homans has stated that as the rewards from activities are received beyond a certain point the profit decreases due to a lessening of the reward value of each unit and an increase in costs, hence, the activity is maintained

²⁷B. F. Skinner, The Behavior of Organisms (N.Y.: 1938), Science and Human Behavior (N.Y.: 1953), Verbal Behavior (N.Y.: 1957).

²⁸Homans (1961), op. cit., p. 13.

²⁹Homans (1962), op. cit., p. 281.

³⁰Ibid., p. 292.

until "the cost of the last unit of action is just equal to the cost unit of reward."³¹ Acknowledging the writings of Gouldner³² on reciprocity in exchange, the norm of reciprocity and the concept of equilibrium, Homans has noted:

Persons that give much to others try to get much from them, and persons that get much from others are under pressure to give much to them. This process of influence tends to work out at equilibrium to a balance in the exchanges.³³

Therefore, forming his base on the variables of quantity of reward, costs, and profits, Homans has attempted to explain social interaction and social structure.

The chief technical terms and the elementary concepts that have entered into Homans propositions and discussion are reward, values, cost, outcome, sentiments, and comparison level.³⁴ Reward refers to the activities on the part of the person which contribute to the gratification of the needs of another person. Such activities are rewarding.

³¹Abraham Zelevnik, "Interpersonal relations in Organizations", in James G. March (ed), Handbook of Organizations, p. 591.

³²Alvin W. Gouldner, "The Norm of Reciprocity: A Preliminary Statement", American Sociological Review, 25: 161-178, April, 1960; and "Reciprocity and Autonomy in Functional Theory," in Llewellyn Gross (ed.), Symposium on Sociological Theory, pp. 241-270.

³³Homans, (1962), loc. cit.

³⁴The definitions provided here have been drawn from Homans (1962) op. cit., pp. 280-281; Homans (1961) op. cit., pp. 30-110; and Paul F. Secord and Carl W. Backman, Social Psychology, p. 253.

Values refers to those reinforcers that offer reward. Cost refers to punishment incurred in carrying out certain activities such as fatigue, anxiety, and frustration as well as the value of rewards foregone by engaging in the activity rather than alternative activities. Rewards less costs equals outcome. A positive outcome yields a profit; if it is negative, a loss. The attitudes and feelings a man takes toward another man or other men is referred to as sentiments. The concept comparison level refers to some minimum level of expectation or desserts based on the subject's past experience in the matter at hand, his past experiences in comparable matters, his judgments of what outcomes others like himself are receiving and his perception of outcomes available to him in alternative matters.

In order to understand the activities of an individual in a dyadic situation Homans has formulated four propositions prefaced by the statement "other things equal":

- (1) If in the past the occurrence of a particular stimulus-situation has been the occasion on which a man's activity has been rewarded, then the more similar the present stimulus-situation is to the past one, the more likely he is to emit the activity, or some similar activity, now.
- (2) The more often within a given period of time a man's activity rewards the activity of another, the more often the other will emit the activity.
- (3) The more valuable to a man a unit of the activity another gives him, the more often he will emit activity of the other.
- (4) But, the more often a man has in the recent past received a rewarding activity from another, the less valuable any further unit of that activity becomes to him; and therefore, by proposition 3, the less

often he will emit the activity that gets him that reward . . . Accordingly this proposition may mask the truth of proposition 2 . . . 35

From these propositions and some findings of research he has described the dynamics of Person in social interaction with Other:

We state them under the usual conditions of "other things equal" . . . the more valuable, then, to Person the activity (or sentiment) he gets or expects from other, the more valuable to Other the activity (or sentiment) Person gives to him. And the more valuable to Person the activity he gets or expects to get from Other, the more often he emits activity that gets him, or he expects will get him, that reward. But as the expectation goes unrealized and his activity goes unrewarded by Other, Person emits the activity less and less often.

Since the cost of Person's activity is the value of the reward that he would have gotten by another activity, foregone in emitting the first, the presence of alternative activities open to Person tends to increase the cost to him of any one of them. The less his current profit from his behavior - - the less, that is, the excess of value over cost - - the more apt he is to change his behavior; and he changes it so as to increase his profit. The alternatives open to Person may be not only different activities but different Others who may reward them, and the more heterogeneous these Others, the more likely it is that some of them will do so: As between different Others, Person tends to emit more activity to - - that is, interact more often with - - that Other in exchange with whom he gets the greatest profit. When the similarity of his own activity with that of another is valuable to him - - a condition that does not always obtain, but does obtain for the similarity of opinions - - and when some people have actually failed, or will probably fail, to change their activity so as to make it like his own, Person will interact more often with Other, the more similar Other's activity is to his own. . . . the social situation tends to become one in which no new change occurs. . . . The propositions that describe the final

³⁵Homans (1962), op. cit., pp. 53-54.

situation are the following. Person interacts more often with Other, the more valuable Other's actual activity (or sentiment) is to him, and the more often Other emits that activity. And since he may give sentiment in return for Other's activity, the higher is the degree of social approval he gives to Other.³⁶

Rewards and Reinforcers

It has been recognized that men have needs which can be satisfied only in interpersonal relations. Commonly offered as examples have been the need to belong to a group; for associating with other human beings; for expressing and sharing in sentiments of loyalty, friendliness and affection; for giving and receiving emotional and cognitive support; and, for receiving marks of group approval such as prestige and esteem. Herein, four major rewards or concepts that have been discussed in detail are those of social approval, social certitude, status congruence, and distributive justice.

The importance of social approval in human interaction and exchange has been described by Homans:

Social approval is . . . a general reinforcer; one can reinforce a wide variety of human activities by providing social approval and similar sentiments in return. In fact social approval will play somewhat the same part in our social economics as money does in regular economics.³⁷

³⁶Homans (1961), op. cit., pp. 110-111.

³⁷Ibid., pp. 34-35.

The concept of social certitude was developed by Zeleznik, Christensen, and Roethlisberger.³⁸ It refers to the feelings of comfort and predictability which a person experiences while in the company of others and the behavior that occurs under conditions of certainty and uncertainty. The authors have stated:

To us it is the need on the part of man for clear and unambiguous relationships. . . . When the condition is realized, a condition of social certitude is felt. Under this condition members of a group know where they stand in relation to each other. They know how they should behave and are expected to behave toward others. Little anxiety exists in such relationships except that engendered by the need to live up to what is expected.³⁹

They have also noted that the cause of social uncertainty may lie with a poor personal identity, poor interpersonal skills, or a condition of 'low status congruence.' Two factors seen as increasing social certitude were a process of social conditioning and a condition of 'status congruence.' It was felt that "the process of social conditioning teaches group members to identify the various status symbols of individuals and to share certain expectations about the kind of behavior generally associated with a status."⁴⁰ In the following manner the authors have described how the condition of 'status congruence' facilitates social certainty:

³⁸A. Zeleznik; C. R. Christensen, and R. J. Roethlisberger, The Motivation, Productivity, and Satisfaction of Workers: A Prediction Study, pp. 56-65.

³⁹Ibid., p. 63.

⁴⁰Ibid., p. 357.

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... his status factors are well established and in-line. As a entity therefore, he can place himself and be placed readily in the structure of a group. People relate to him in terms of common expectations of behavior toward a person well established at his particular level of status. In turn, the individual knows what to expect from others. . . . Nevertheless, in a condition of social certitude the individual becomes "structured" into a group.⁴¹

Social certitude is, therefore, directed toward some degree of order and predictability in the individual's social future that influence his behavior and the behavior of others towards him.

Contained in the discussion of social certitude was the important concept of status congruence. Status congruence may be regarded as "the degree to which an individual's rank position on important societal status hierarchies are at a comparable level."⁴² Underlying the concept of status congruence is the assumption that a low measure of status congruence is indicative that such a person will experience conflicting role expectations⁴³ which will both interfere with each other and result in frustration and uncertainty, thereby increasing psychological stress. Thus, a state of status incongruence disrupts social relationships. People with status incongruence learn that, because the various stimuli they present to others are not consistent, others will behave toward them in an unpredictable manner - - sometimes in a rewarding fashion

⁴¹Ibid., pp. 358-359.

⁴²W. T. Martin, "Socially Induced Stress: Some Converging Theories," Pacific Sociological Review, 8: 91, 1965.

⁴³J. T. Borhek, "A Theory of Incongruent Experience," Pacific Sociological Review, 8: 91, 1965.

and other times not. For this reason it is assumed that persons will strive toward a state where they are ranked uniformly in all respects: that is, will strive to achieve status congruence. Such a state is associated with the rewarding certainty that others will behave consistently toward them. The less the member is able to realize congruence in his social status factors in relation to other members of the group the more uncertain and anxious he becomes: the result being an attempt to reduce anxiety by:

(a) . . . infrequent interactions, (b) . . . restricting activities to more structured social relationships in which the ambiguity is accepted, (c) . . . excelling in technical performance where skill, competence, and knowledge are important, (d) . . . the expression of more liberal social attitudes, and (e) . . . the assertion of the ideals over the norms of behavior as to what the determinants of behavior should be.⁴⁴

Therefore, status congruency fosters social certainty and influences behavior.

Distributive justice can be described as obtained equality on the basis of comparison in terms of rewards received in relation to the costs incurred and the investments made; that is, when rewards minus costs are proportional to investments.⁴⁵ The concept "investment" refers, according to Homans, to both ascribed and achieved status characteristics such as a person's history or background.⁴⁶ They may have no intrinsic value

⁴⁴Zaleznik, Christensen, and Roethlisberger, op. cit., p. 75.

⁴⁵Homans (1961), op. cit., p. 232.

⁴⁶Ibid., pp. 242-247.

to show that the function f is continuous at x_0 . Let $\epsilon > 0$ be given. We must find $\delta > 0$ such that if $|x - x_0| < \delta$, then $|f(x) - f(x_0)| < \epsilon$. Since f is continuous at x_0 , there exists $\delta_1 > 0$ such that if $|x - x_0| < \delta_1$, then $|f(x) - f(x_0)| < \epsilon/2$. Also, since f is continuous at x_0 , there exists $\delta_2 > 0$ such that if $|x - x_0| < \delta_2$, then $|f(x) - f(x_0)| < \epsilon/2$. Let $\delta = \min\{\delta_1, \delta_2\}$. Then if $|x - x_0| < \delta$, we have $|f(x) - f(x_0)| < \epsilon/2 + \epsilon/2 = \epsilon$. Thus f is continuous at x_0 .

Let $f: \mathbb{R} \rightarrow \mathbb{R}$ be a function. We say that f is continuous at x_0 if for every $\epsilon > 0$, there exists $\delta > 0$ such that if $|x - x_0| < \delta$, then $|f(x) - f(x_0)| < \epsilon$. We say that f is continuous on \mathbb{R} if f is continuous at every $x_0 \in \mathbb{R}$. The function $f(x) = x^2$ is continuous on \mathbb{R} . The function $f(x) = \begin{cases} 1 & \text{if } x \neq 0 \\ 0 & \text{if } x = 0 \end{cases}$ is not continuous at $x = 0$.

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but may acquire value through consensus of opinion. Investments which through consensus have value confer upon a person the right to be accorded a certain status. They may include variables such as ethnicity, family, age, sex, seniority, responsibility, and education.⁴⁷ In practice, says Homans, a person merely compares his standing relative to another person on these variables, thinking of himself as higher, lower or equal to the other person. When equality prevails distributive justice has been achieved. Marked inequalities are perceived as unjust. Homans has gone on to describe the behavioral effects of a condition where distributive justice is not met:

The more to a man's disadvantage the rule of distributive justice fails of realization, the more likely he is to display the emotional behavior we call anger. . . . Not only do men display anger or, less prominently, guilt when distributive justice fails in one way or the other, but they also learn to do something about it. They learn to avoid activities that get them into unjust exchanges: they learn to emit activities that are rewarded by the attainment of justice, and by the same token, to forgo these activities becomes a cost to them. In short, justice itself becomes one of the values being exchanged.⁴⁸

It becomes apparent that the rewards of social interaction are rewards when they are achieved in fair exchange but are costs when the criteria of distributive justice are not met.

⁴⁷Zaleznik, Christensen, and Roethlisberger, op. cit., p. 44.

⁴⁸Homans (1961), op. cit., pp. 232-233.

Summary

In order to provide background for the discussion on "exchange theory, small group behavior and professionalism," the writer has presented a general overview of exchange theory and a description of individual behavior basic to social interaction. Special attention has been given to certain concepts of social reward that have particular relevance to this study. Using these hypotheses about a person's motivation in a dyadic relationship and the resultant behavioral mechanics as a base the writer has elaborated on them to describe the evolutionary developments that take place in a group and their effects on group structure.

IV. EXCHANGE THEORY, SMALL-GROUP BEHAVIOR AND PROFESSIONALISM.

In this section the concepts of exchange theory have been utilized to describe the process of elaboration in groups and the group structure product of this process. The effects of a professional role orientation among the membership on the process and the product have been hypothesized.

Introduction

It was noted previously that when people work together they soon develop ways of thinking and behaving that are different from, or in addition to, the behavior which is required to perform the job. Recognizing this, Homans has postulated a conceptual scheme that attempts to

It is not the purpose of this study to determine the extent to which the social structure of the community is related to the social structure of the family. The purpose of this study is to determine the extent to which the social structure of the family is related to the social structure of the community. The social structure of the family is defined as the pattern of relationships between the members of the family. The social structure of the community is defined as the pattern of relationships between the members of the community. The social structure of the family is related to the social structure of the community in that the social structure of the family is a reflection of the social structure of the community. The social structure of the family is also a reflection of the social structure of the community in that the social structure of the family is a reflection of the social structure of the community.

1. THE SOCIAL STRUCTURE OF THE FAMILY

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describe this emergent behavior on the basis of four elements: activities, interaction, sentiment and norms. Members of a group have been seen as being brought together in a "given situation" -- the external system -- that prescribes the activities, interactions and sentiments required of the members and the group for survival within the organization. As these people interact in this "given situation" there arise new activities, interactions and sentiments that are not necessarily specified by the external environment. This process has been called the "mode of elaboration"⁴⁹, and the product of the process has been called the "emergent" or "internal" system.⁵⁰ One particular product of the emergent system is a type of sentiment called "norms", which describe what the relationships should be among the sentiments, activities and interaction of the group. Homans has not seen these elements and systems as operating independently but as demonstrating a condition of "mutual dependence" -- a change in any of the elements or systems will produce some changes in the others. When the group has reached a condition of "practical equilibrium", it has a well established "group structure". The motivational mechanisms, underlying this whole emergent process, have been described in his writings on exchange theory.

⁴⁹George C. Homans, The Human Group, (N.Y.: 1950), p. 119.

⁵⁰Ibid., pp. 108-109.

The Model

Arthur N. Turner, using the writings of Homans as his base, has developed a "Conceptual Scheme for Describing Work Group Behavior".⁵¹ The scheme is diagrammatically represented in Figure 1. The writer has centered his discussion around the relationships shown in the diagram and has used its sequential representation as his format.

Background Factors and Required and Given Behavior

The background factors and required and given behavior constitute the 'external system' or the 'givens'. The background factors acting independently or in combination produce the required and given behavior. These required and given behaviors, in turn, affect the emergent behavior. The effects on the emergent system of all these factors principally lies in the degree that they foster or hinder interaction.

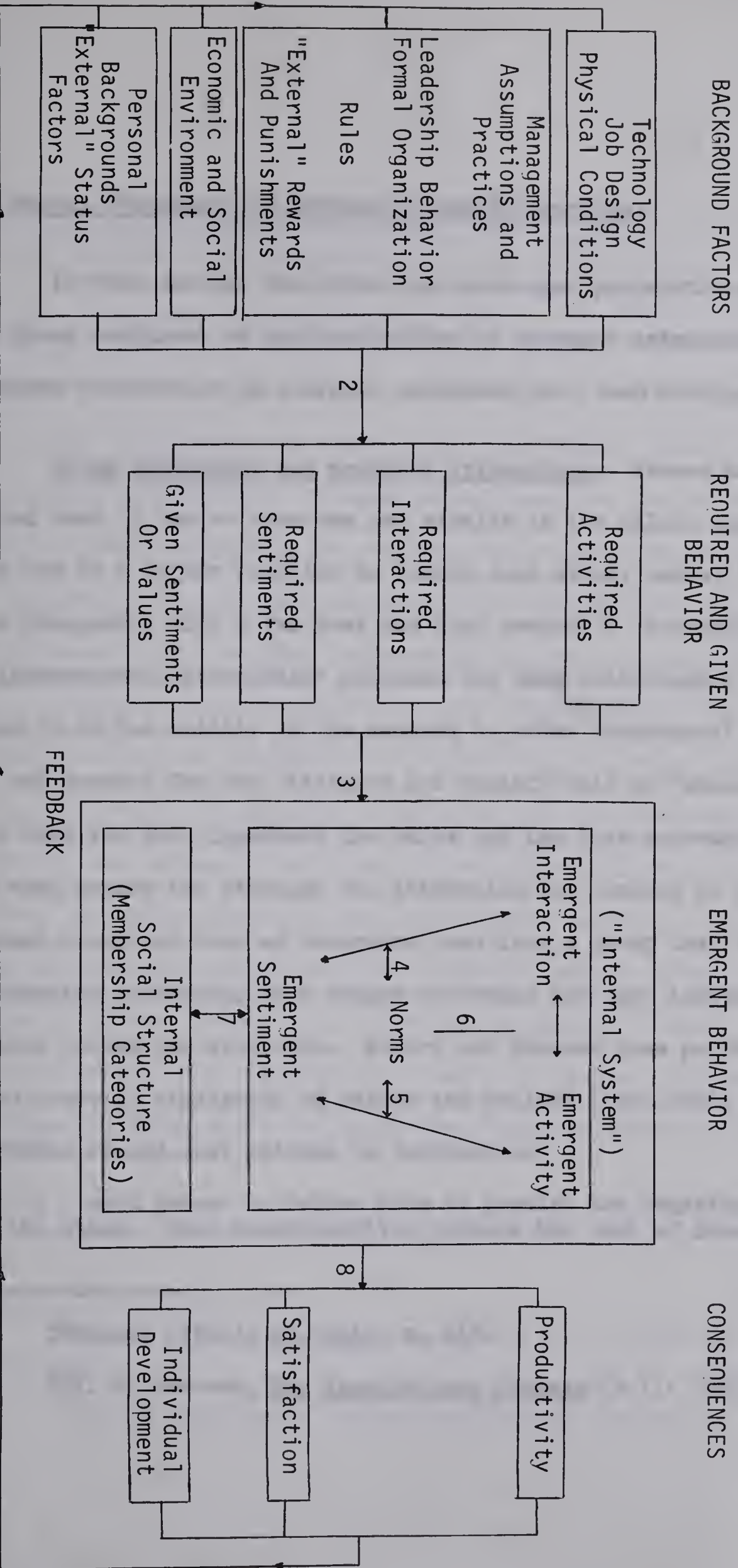
Although the writer is cognizant of the multi-factor nature of the external system he has primarily concerned himself with the effects of the "personal background - external status factors" and "given sentiments or values" on emergent behavior. Basic to this study has been the assumption that the other factors do not vary among the schools to the extent that they have a differential effect on the social structures of the various schools or, if there are differential effects, they are randomly distributed.

⁵¹Arthur N. Turner, "A Conceptual Scheme for Describing Work Group Behavior," in Paul R. Lawrence, et al. (eds.), Organizational Behavior and Administration, pp. 213-233.

FIGURE 1

WORK GROUP BEHAVIOR

RELATIONS BETWEEN ELEMENTS OF EXTERNAL AND INTERNAL SYSTEMS



The Mutual Dependence of Sentiments and Interaction.

In this section the writer has developed propositions relating the given sentiment of professionalism to emergent interaction and the emergent interaction to emergent sentiment have been developed.

Given sentiments and emergent interaction. Homans has predicted that if two or more men are similar in the values they hold then they are in a better position to reward each other, hence, to interact more frequently with a low cost and high reward.⁵² Newcomb's "Theory of Interpersonal Attraction" proposes the same relationship but attributes it to the ability of the members to offer "consensual validation" -- add support for the attitudes and beliefs held by Person.⁵³ He felt that the more important the value and the more relevance it had for each member the stronger the attraction for members to interact. Newcomb predicted that as strangers come into a group they elicit information concerning each others attitudes and seek individuals with similar values and attitudes. Secord and Backman have pointed out that where there is similarity of values and beliefs there would be a more favorable reward-cost outcome in interaction:

. . . each person is better able to predict the behavior of the other. Such predictability reduces the cost of inter-

⁵²Homans (1961), op. cit., p. 215.

⁵³T. M. Newcomb, The Acquaintance Process (N.Y.: 1961).

action and increases the level of rewards exchanged. . . .
 . Such predictability also allows one to elicit reward-
 ing behavior more effectively from the other person.
 The net result is a more favourable reward-cost outcome.⁵⁴

As these individuals interact they would perceive more attitudes that they had in common thus reinforcing the initial contacts, or as Homans has stated "what gets done then seldom gets undone later."⁵⁵ Stating the general proposition, it would appear that the greater the similarity in values, attitudes, and beliefs that exist among two or more men the higher the profit achieved in interaction with each other and the more frequent will be their interaction with one another.⁵⁶

It was previously noted that professional groups have a special subculture that the neophyte has to learn and fit into. In the review of the literature it has also been noted that the professional training programs have served as a process of social conditioning that have created attitudes similar to the experienced teachers in the field and that this socializing process has created a certain amount of consensus on basic values, status symbols and expectations.⁵⁷ Under the description of professional role orientation a matrix of values, attitudes and beliefs has been described that in theory should be considered relevant and

⁵⁴Secord and Backman, op. cit., p. 257.

⁵⁵Homans, op. cit., p. 218.

⁵⁶The last part of this statement is but a corollary of Proposition I.

⁵⁷See "Correlates of Professionalism" pp. 98-103.

important by the teachers. One important dimension of this professional role was the orientation towards colleagues. This orientation, with its belief in cooperative, equalitarian and supportive behavior, coupled with the similarity of values that would be present in a school whose teachers have a high professional role orientation, would be expected to foster emergent interaction among the teachers.

Hypothesis 1: There will be a positive relationship between the rates of emergent interaction in teacher groups and the average professional role orientation of these groups.

Interaction and emergent sentiments. Homans has postulated that "persons who interact frequently with one another tend to like one another . . . If the frequency of interaction between two or more persons increases the degree of their liking for one another will increase, and vice versa."⁵⁸ Tracing the process, Secord and Backman have described the initial interactions in a group as persons sampling the interactions with the other members in order to estimate the profit entailed in the various alternative interactions available, then they "commit" themselves to those interactions yielding the highest profit.⁵⁹ Previously it was noted that as people interact they increase their degree of perceived similarity and this fosters increased interaction. Festinger, Schachter and Back have remarked that as the friendship de-

⁵⁸Homans (1950), op. cit., pp. 111-112.

⁵⁹Secord and Backman, op. cit., p. 261.

velops and becomes more intimate, the greater the range of content which flows in their interaction and the lower the restraining forces against interaction.⁶⁰ The result is a greater amount of sharing of information, opinions, attitudes and values, leading to increased consensual validation and social certitude, therefore, increased rewards. With the greater interaction and information exchange the members are able to achieve a better mutual profit level since each member is able to reduce the unnecessary costs he presents to the other members and the interactions become easier. As the interactions increase not only do the persons perceive more similarity in values, beliefs and attitudes but they tend to develop more of these in common. Festinger et al. have stated that the interactions change the individual's "cognitive structure, attitudes, and opinions so that they are more in line with those of other members of the group . . ."⁶¹ This, then, reinforces the effects of similarity. Whyte has described another important element in interaction that fosters or hinders the development of friendships:

. . . we recognize certain words as implying friendly sentiments and other words as implying negative or hostile senti-

⁶⁰Festinger, Stanley Schachter and Kurt Back, Social Pressures in Informal Groups, p. 167.

⁶¹Ibid., p. 171.

ments toward us. . . . if a man emits friendly symbols toward us, we increase our friendly sentiments toward him, interact with him more often, and are more inclined to respond to initiations of activity from him. If he emits hostile symbols, we are inclined to react with negative sentiments, to decrease our interactions, and to resist his efforts to initiate activities for us.⁶²

Therefore, if the cues in an interaction are interpreted as meaning that the other person has favourable attitudes toward us, we feel rewarded and tend to reciprocate the attraction. Reflecting the reciprocal nature of interaction and sentiment, the basic proposition states that favorable sentiments emerge between members who interact frequently and vice versa, frequent interaction emerges between members who like each other.

Several facets of professionalism that would be expected to promote interaction among members of a school staff having a high degree of professional role orientation have been noted in the discussion leading to Hypothesis One. If there is a higher degree of emergent interaction in the teacher groups having a higher professional role orientation than in those with lower professionalism and if frequency of interaction contributes to the development of strong affection relationships, then it would be expected that the higher the average professional role orientation of a group the stronger the sentiments of friendship.

⁶²William Foote Whyte, Men at Work, p. 31.

which have been found in the same locality. The first of these is a small, dark, brownish, oval, with a slightly irregular outline, and a smooth surface. It is about 1/16 of an inch in length, and 1/32 of an inch in breadth. The second is a small, dark, brownish, oval, with a slightly irregular outline, and a smooth surface. It is about 1/16 of an inch in length, and 1/32 of an inch in breadth. The third is a small, dark, brownish, oval, with a slightly irregular outline, and a smooth surface. It is about 1/16 of an inch in length, and 1/32 of an inch in breadth.

It is found in the same locality as the first, and is about the same size.

The first of these is a small, dark, brownish, oval, with a slightly irregular outline, and a smooth surface.

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The ninth is a small, dark, brownish, oval, with a slightly irregular outline, and a smooth surface.

The tenth is a small, dark, brownish, oval, with a slightly irregular outline, and a smooth surface.

The eleventh is a small, dark, brownish, oval, with a slightly irregular outline, and a smooth surface.

The twelfth is a small, dark, brownish, oval, with a slightly irregular outline, and a smooth surface.

The thirteenth is a small, dark, brownish, oval, with a slightly irregular outline, and a smooth surface.

The fourteenth is a small, dark, brownish, oval, with a slightly irregular outline, and a smooth surface.

The fifteenth is a small, dark, brownish, oval, with a slightly irregular outline, and a smooth surface.

Hypothesis 2: The strength of the sentiments of friendship within teacher groups will be positively related to their average professional role orientation.

Norms and Emergent Sentiments

A norm has been defined as "an emergent sentiment that is shared and serves as a rule affecting the relationships among the members of a group."⁶³ Homans has recognized the emergent nature of norms and has described it as the product of the "ongoing activities."

The more frequently persons interact with one another, the more alike in some respects both their activities and their sentiments tend to become.⁶⁴

. . . the more frequently men interact with one another, the more nearly alike they become in the norms they hold, as they do in their sentiments and activities.⁶⁵

The cause for this increased similarity has been seen as the increased clarity in the perception of the members of the values and sentiments held by other members and an increased clarity in definition of the norm. In his analysis of the decay of Hilltown, Homans noted that a decrease in the frequency of interaction between the members of a group and in the number of activities they participate in together led to a decline in the extent to which norms were clear and held in common -- the end

⁶³See page 22 .

⁶⁴Homans (1950), op. cit., p. 120.

⁶⁵Ibid., p. 126.

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result was an absence of social certitude and a further reduction in interaction.⁶⁶ Secord and Backman have concluded that frequent interaction not only results in regularities of feelings and behavior but also affects the perceptions and cognitions of group members, therefore, fostering the ability of group members to "arrive at consensus on what feelings, perceptions, and behavior are appropriate or inappropriate."⁶⁷ Taking into account the relationship between friendship and interaction it can be stated that the larger the number of members that like other members, the more similar are their sentiments, activities and conformity to the norm.⁶⁸ This postulated relationship between interaction and friendship, and similarity of sentiments and conformity to norms supports the statement that the higher the frequency of interaction and the degree of liking among members of a group then the more similar will be their values and beliefs and the greater their consensus on norms.

In discussing the relationship between norms and values Homans has noted that a norm is an "idea in the minds of men that has common acceptance."⁶⁹ Zaleznik and Moment have described the interplay between

⁶⁶Ibid., pp. 360-366.

⁶⁷Secord and Backman, op. cit., p. 237.

⁶⁸Homans (1950), op. cit., p. 188.

⁶⁹Ibid., p. 123.

values and norms as standards of behavior in group relationships.⁷⁰ They have stated that values were also ideas in the minds of men that specified how people should behave; they also attached degrees of goodness to activities; they also prescribed relationships; and they also were expressed continually in interaction both verbally and nonverbally. Norms and values are closely integrated but "whereas norms of behavior in a group are quite specific and establish limits to behavior, values represent "shoulds" and "goodness", which are unlimited in degree."⁷¹ While acknowledging this intimate dependency, Blau has described the interrelatedness in a slightly different manner:

Social values and norms are common orientations toward social conduct that prevail in a society or group. Social values govern the choice of objectives that are experienced as worth striving for, and social norms differentiate between proper and improper conduct.⁷²

Since norms stem from collectively agreed upon values and since the shared values of groups can be placed in a value hierarchy according to the degree of consensus and importance, it has been concluded by Secord and Backman that norms can also be ranked according to their degree of consensus, clarity and importance and that this hierarchy would be

⁷⁰Abraham Zaleznik and David Moment, The Dynamics of Interpersonal Behavior, pp. 104-105.

⁷¹Ibid., p. 104.

⁷²Peter M. Blau, "Structural Effects," American Sociological Review, 25:179, 1960.

functionally related to the value hierarchy.⁷³ The literature is replete with descriptions and findings that support the proposition that the range of acceptance of behavior and attitudes decreases with the increased importance of the norms.⁷⁴ Therefore, a relationship of mutual dependence exists between values and norms.

Exchange theory provides several propositions about the mechanics of the relationship between values, norms and conformity. Since the relationship between interaction and sentiments has been described the writer has not made reference to it here but stresses the fact that it is intricately interwoven in what follows. The theory holds that underlying the sociological principle of intergration between norms and values is the extent to which reward-cost outcomes are affected. Since the "desired state" for an individual and a group is defined in terms of their value structure, then the norms involve important rewards and costs to the extent that they are functionally integrated with the value structure of the individual and the group and to the extent that the value structure of the individual is integrated with that of the group. Norms can be seen as encouraging behavior that maximizes member satisfaction and as discouraging behavior that might increase costs. Since these norms represent the group's attempts to reach a standardization of

⁷³Secord and Backman, op. cit., pp. 463-464.

⁷⁴For a general statement of this proposition, see M. Sherif and C. Sherif, Reference Groups: Exploration into Conformity and Deviation of Adolescents, p. 180.

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behavior yielding high profit, then we would expect that the group would increase the costs - - initiate some form of punishment - - for individuals not conforming to the norm in such a manner that their nonconformity threatens to adversely affect the reward-cost outcomes for other members of the group.

The existence of norms offers many rewards for the individual and the group. The first and obvious reward is one inherent in the norm itself: the norm is integrated with some moral or ethical value that the person holds dear, therefore, the person conforms to the norm "for its own sake." A norm also serves as a standard against which an individual can validate his values, attitudes and beliefs and derive the rewards of consensual validation. Zalesnik and Moment have attributed the development of norms to the process of validation:

The process of validation describes essentially the means by which groups develop norms. It is essentially a trend toward standardization in group behavior. We are suggesting that the basis for standardization is the needs of the individual for confirmation from others.⁷⁵

Similarly, seeing Other conform to the norms acts as validation of the appropriateness and correctness of the norm and reinforces conformity in Person and other members of the group.⁷⁶ Since conformity to a norm results in social approval then this approval becomes a major reinforcer. As Homans has stated:

⁷⁵Zalesnik and Moment, op. cit., p. 130.

⁷⁶Homans (1961), op. cit., p. 46.

. . . people often reward conformity with social approval . . . and Other, though himself indifferent to the norm, may still conform for the sake of the approval it gets him. . . . Person will expect Other to conform; his failure to do so becomes not just a failure to reward Person but an active withdrawal of reward from him, and the withdrawal of reward is met with hostility.⁷⁷

Secord and Backman have pointed out that another important reward offered by conformity to a norm was the ability to predict and anticipate consequences:

Each party in the interaction shares expectations concerning his own and the other's behavior. Such well established shared expectations usually have an obligatory quality. The other person is not only expected to behave in a certain way; he should behave in that way. . . . This normative quality of expectations stems from the fact that only when one is able to anticipate consistently the behaviors of others can one maximize one's reward-cost outcomes. The extent to which expectations are normative varies in proportion to the importance of the rewards and costs involved.⁷⁸

It would appear that conformity to norms is a behavior pattern that returns manifold rewards.

When conformity is not demonstrated by a member the most frequent form of punishment is the withdrawal of social approval or even hostility. If the person has no alternatives available that make it profitable to incur these costs then he can maximize his profits within the group by (a) demonstrating normative behavior hence reducing his costs, (b) modify his attitudes, values and beliefs to increase the rewards,

⁷⁷Ibid., pp. 116-117.

⁷⁸Secord and Backman, op. cit., p. 455.

(c) combine his activities with other deviant group members and receive his rewards from the subgroup, (d) a combination of these or (e) maintain his personal integrity and become an isolate. The strength of the group's norms to cause (a) or (b) above is dependent upon the attraction the group has for the member. Therefore, the strength of a group norm to induce change in behavior or in attitudes, beliefs and values is dependent upon the cohesiveness of the group.

Since it has been postulated that the higher the frequency of interaction and the degree of liking among members of a group the more similar will be their values and beliefs and the greater their consensus on norms, and since it has been proposed that a professional role orientation promotes frequency of interaction and the degree of liking among members, then one would expect that the higher the average professional role orientation of a group the lower would be variation within the group in professional role orientation. If the statements that (1) there is a functional relationship and a condition of mutual dependency existing between the value hierarchy and the norm hierarchy, (2) that a norm involves important rewards and costs to the extent that they are functionally integrated with the value structure, and (3) the more important the rewards yielded the lower the degree and range of tolerance of deviant behavior are true, then it would be expected that a group which more highly values the attitudes inherent in a professional role orientation and has a higher level of interaction so that there is clarity

and common recognition of importance would have a narrower range of opinion on these expressed values.

Hypothesis 3: The degree of consensus within teacher groups on the professional role orientation will be positively related to their average professional role orientation.

Hypothesis 4: The values, attitudes and opinions contained in a professional role orientation are integrated into the norms of teacher groups.

Cohesiveness

As the interaction patterns, affect structures and norms in a group become better established, the group takes on an element of attractiveness to its members and they come to identify with it. This attractiveness of the group to its members is a product of the reward-cost outcomes that the individuals sees the group as capable of offering, therefore, factors enhancing this profit relationship increase the cohesiveness of the group.

Previously, a number of different rewards that a member could receive from the group were noted. Golembiewski has classified these factors determining the attractiveness of a group into two categories: "the properties of the group, and the properties of group members, including their predispositions to relate with others."⁷⁹ Referring to this

⁷⁹R. T. Golembiewski, The Small Group, p. 153.

first class of factors, Festinger et al. have stated:

A . . . factor which contributes to the cohesiveness of the group may be called the "means control" of the group. By this we mean the extent to which the group mediates goals which are important for the members. There are some goals which can only be achieved by means of membership in some group. . . . We can then derive that the more valent a group is and the greater the number and importance of the goals the accessibility to which are in control of the group, the more cohesive the group will be.⁸⁰

To this Golembiewski has added the prestige of group membership and the prestige of the task.⁸¹ Festinger et al. have emphasized the importance of the properties of group members in determining cohesiveness. The greater the number of friends, the more complete the friendships in terms of total number of friends, and the greater the interaction in a group were seen by them as providing greater attraction to the group.⁸² Newcomb et al. have concluded that, besides a high level of mutual attraction among its members, "shared attitudes, including shared acceptance of rules (normativeness), concerning group-relevant matters" were important determiners of cohesiveness.⁸³ Golembiewski saw lack of consensus about norms as a common cause of friction in groups and hence a cause of low satisfaction and cohesiveness.⁸⁴ Secord and

⁸⁰Festinger, Schachter and Back, op. cit., p. 165.

⁸¹R. T. Golembiewski, "Small Group and Large Organizations" in James G. March (ed.), Handbook of Organizations. (1966) p.90.

⁸²Festinger, Schachter and Back, op. cit., pp. 29, 90, 164-165.

⁸³T. M. Newcomb, R. H. Turner and P. E. Converse, Social Psychology: The Study of Human Interaction, p. 486.

⁸⁴Golembiewski (1966), op. cit., p. 110.

Backman have emphasized the fact that "the total force operating on group members to remain in a group is a function not only of attraction . . . but also of the outcomes available in alternative relations outside the group."⁸⁵ The higher the attractiveness of alternatives the higher the costs associated with remaining in one group, therefore, the lower the attraction of the group for the individual, and vice versa.

In describing the effects of cohesiveness Festinger et al. concluded that from their theory it follows that:

. . . the more cohesive the group . . . the more active the process of communication which goes on within the group, the greater will be the effect of the process of communication in producing uniformity of attitudes, opinions, and behavior, and the stronger will be the resulting group standard, as indicated by the degree of uniformity among members of the group and the amount of deviation from the group standard allowed in members.⁸⁶

The writer has already characterized the more professional groups as having a greater amount of interaction, a higher level of friendship and a narrower variation in their attitudes and a greater consensus on their norms, therefore, since these factors have been found to be the major facilitators of cohesiveness, he must also propose that the higher the average professional role orientation of the schools the higher the cohesiveness of the group. This is further reinforced if one adds the factor of "means control." Since the professional groups mediate goals

⁸⁵Secord and Backman, op. cit., p. 269.

⁸⁶Festinger, Schachter and Back, op. cit., p. 175.

for which there is no alternative and since these goals are highly valued, then the group has more attraction to the members with an increase in professional role orientation.

Hypothesis 5: The level of cohesiveness within a teacher group will be positively related to the group's average professional role orientation.

In the testing of Hypothesis 4, the writer has used one relationship between cohesiveness and norms as critical in the determination of the existence of a group standard. This relationship has been enunciated by Festinger et al.:

To be able to create and maintain group standards, a group must have power over its members. This power, the ability to induce forces on its members, stems from its cohesiveness. If the group uses this power to make the members think and act in the same way, that is, if there are group standards, the homogeneity of the attitude and activity patterns should be related to the cohesiveness of the group. Correspondingly, if no relation exists between cohesiveness and homogeneity of the pattern, the group does not use its power to induce the members to conform and we may take it as indicative of the absence of group standards.⁸⁷

Then, a positive relationship between the degree of consensus of the teacher groups on their professional role orientation and their cohesiveness would be expected if the values associated with professionalism are integrated into the norms of these groups.

⁸⁷Festinger, Schachter and Back, op. cit., p. 90.

Esteem

As the group becomes further elaborated the membership is differentiated according to their position of worth, as adjudged by the other members of the group, and granted varying amounts of esteem.

For purposes of clarity the writer has drawn a distinction among three related concepts: esteem, prestige and status. Esteem has been defined as "a position of worth that a person is granted by fellow members of a group due to some expressed activities and characteristics that are judged valuable according to the values of that group." This definition is in agreement with that provided by Homans: "the greater the total reward in expressed social approval a man receives from other members of his group, the higher is the esteem in which they hold him."⁸⁸ Esteem is earned. Prestige has been viewed as the worth granted to an office or position irrespective of the occupant of that office or position. Prestige is attributed. The worth accorded a person on the basis of the degree to which certain characteristics of that person realize the norms and values of society has been called status. Zaleznik, Christensen and Roethlisberger have labelled these characteristics "status factors" and listed age, pay, seniority, education, ethnicity and sex as examples.⁸⁹ Status is attributed on the basis

⁸⁸Homans (1961), op. cit., p. 149.

⁸⁹Zaleznik, Christensen and Roethlisberger, op. cit., p. 44.

of societal values and possessed characteristics. This study has been primarily concerned with esteem.

Homans has described a very close relationship between normative behavior and esteem:

Evaluation is a sentiment released or stimulated by a comparison of a man's activities with those of other members of his group in accordance with some standard, the standard being provided by the norms and assumptions of the group. . . . For a man to rank high in his group, it is not enough that he should evaluate himself highly; his group must also accept his evaluation, and the norms of the group provide the only possible basis for agreement. . . . This leads to . . . the fundamental hypothesis that the higher the rank of a person within a group, the more nearly his activities conform to the norms of the group.⁹⁰

This hypothesis has also been stated in the reversed form: the closer an individual comes to realizing in all his activities the norms of the group as a whole, the higher will be the esteem in which he is held.

Homans has suggested an explanation for this relationship by utilizing the "supply and demand" concept from economics in conjunction with distributive justice.⁹¹ Fundamentally, the relationship can be described as the rarer and more highly rewarding the services an individual is able to grant the greater will be the approval that he can command in return and the members will see this return as just. When the

⁹⁰Homans (1950), op. cit., pp. 140-141.

⁹¹Homans (1961), op. cit., pp. 146-147.

capacity to perform an activity is commonly held by the members of a group and these members are equally willing and able to provide this service then the price or reward, in the form of social approval, that an individual is able to demand for providing this service will be equal to or less than that which the other suppliers would demand. Therefore, these activities that demand roughly equal amounts of approval are the ones that a relatively large number of members are able to supply: they do not serve to differentiate among group members except for those members that are unable to provide even these commonly held services. Members that are able to provide services that are in short supply and are valuable to a large number of the members -- the number of members that demand the service is large in proportion to the number that can supply it -- can demand a larger amount of approval than other members of their group. Homans points out that "obviously, for many members to find the same service valuable, many members must, for any number of possible reasons, share the same values!"⁹² Since the norms are an expression of the shared values of the group, then the person providing rare services must provide "not just conformity but a high degree of conformity."⁹³

As was previously pointed out, distributive justice refers to

⁹²Ibid., p. 147.

⁹³Ibid., p. 163.

the relationship in an exchange between the outcomes, in terms of rewards that a man receives, and the inputs, in terms of the costs incurred and the investments made. The attributes that are to be considered investments and the values to be placed on them are not intrinsic but acquired through the consensus of opinion in the group. The judgmental statement of equity in exchange then becomes:

... if one man is "better" than another in his investments, he should also be "better" than the other in the value of the contribution he makes and in the rewards he gets for it; his cost in making it should be higher too, so long as it is the sort of cost that a superior contribution necessarily incurs.⁹⁴

Some of the costs associated with superior contribution are the acceptance of a leadership position and responsibility. The group seeing the granting of valuable services and recognizing the costs incurred and the investments made will grant that it is just that the provider of this service should receive greater approval. In summary, it can be stated that for high value received, men will return high esteem and this relationship will be seen as equitable by the group -- the standards for judgment being derived from the shared values or norms of the group.

According to the nature of rewards offered, Jennings has differentiated between two types of esteem: esteem granted by the "socio" group and the "psyche" group.⁹⁵ In the "socio" group esteem is

⁹⁴Ibid., p. 245.

⁹⁵Helen H. Jennings, Leadership and Isolation: A Study of Personality in Inter-personal Relations, p. 278.

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granted on the basis of the values that a member is able to contribute toward the accomplishment of the group's tasks. It is on the basis of perceived level of competence or skill that members presumably tend to select work partners. In the "psyche" group the esteem is granted on the basis of the values of friendship and the ability to satisfy social needs. This is associated with the non-task values held in common. This study has entitled esteem granted on the basis of perceived level of competence or skill as technical esteem and that based on the ability to satisfy social needs as social esteem.

The relationship between norm conformity and esteem suggested by Homans and verified by the research⁹⁶ suggests a relationship between professional role orientation and esteem. This study has proposed that there will be a positive relationship between the professional role orientation of a teacher and the esteem in which he is held on both the technical and social dimensions, and that this relationship improves with an increase in the average professional role orientation of the teacher group. It has been noted that the dimensions of professional role orientation have values associated with both the technical and the social aspects of the profession. In the review of the literature on the correlates of professionalism it was noted that the findings consistently showed a high relationship between the amount

⁹⁶See "Esteem", pages 111 and 112.

of formal training and professional role orientation. This, plus the fact that educational background undoubtedly has a high investment value among teachers and also facilitates the ability of the possessor to grant high task related values (advice and information), has suggested the relationship between professionalism and technical esteem. It was also noted that one of the most important dimensions of professionalism, the colleague orientation, required teachers to demonstrate friendliness, loyalty, and other positive sentiments toward other members of the profession. The effects of value consensus and this colleague orientation on the formation of friendships have suggested the relationship between professional role orientation and social esteem. Since the evaluation of esteem is based upon the consensus of values in the group performing the evaluation, and since a positive correlation between average professional role orientation and consensus on the nature and importance of the values has been suggested then it has been hypothesized that the relationship between the professional role orientation of the teachers and the esteem in which the group holds them will increase with a corresponding increase in the average professional role orientation of the groups. A positive correlation between a person's rank on the two types of esteem would also be expected.

Hypothesis 6: There will be a positive relationship between the professional role orientation of the teachers and the technical esteem in which they are held by the teacher group.

Hypothesis 7: There will be a positive relationship between the professional role orientation of the teachers and the social esteem in which they are held by the teacher group.

Hypothesis 8: The relationships between professional role orientation and technical and social esteem will be closer in teacher groups having a higher average professional role orientation.

Hypothesis 9: There will be a positive relationship between the rankings according to technical and social esteem and this relationship will be closer in the teacher groups having a higher average professional role orientation.

Leadership

In the process of differentiation of membership certain individuals come to be identified as "leaders". If Bennis' definition of leadership as "the process by which an agent induces a subordinate to behave in a desired manner by virtue of the agents ability to control rewards and the subordinates need satisfaction"⁹⁷ is accepted, then the informal leader or the group leader can be defined in terms of his ability to mediate rewards and need satisfaction in the group in order to influence member behavior. It becomes obvious that since the highly

⁹⁷W. G. Bennis, "Leadership Theory and Administrative Behavior: The Problem of Authority," Administrative Science Quarterly, 4: 295-296, 1960.

esteemed members of a group mediate the granting of values that are rare and valuable to the members of the group, then the esteem in which a person is held gives us a measure of the potential of that person to exert influence. It was previously noted that esteem was granted on the basis of realizing in activities the norms of the group.

These relationships have led Homans to state:

. . . the closer a member comes to realizing the norms of the group, the more interactions he will receive from and give to other members of the group. . . . One can call the member who comes closest and interacts most the leader.⁹⁸

Referring to the relationship between esteem and authority, Homans has concluded:

Esteem plays in informal authority the part that official authentication of an officer's position plays in formal authority: it creates the presumption that compliance with an order emanating from him will bring net reward, and failure to comply, net punishment.⁹⁹

Not only does esteem play a part with leadership but leadership affects the esteem of the agent. Since the leader mediates punishments as well as rewards, he raises the costs he presents in interaction with the subordinates and this rise in cost creates an ambivalent situation for the expression of sentiments by these subordinates. This ambivalence reduces the esteem in which the leader is

⁹⁸H. W. Riecken and G. C. Homans, "Psychological Aspects of Social Structure," in Gardner Lindzey (ed.), Handbook of Social Psychology, Vol. II, p. 818.

⁹⁹Homans (1961), op. cit., p. 293.

held. This would suggest that the persons most highly esteemed, especially on the social dimension, would be those exhibiting high reward activities and not incurring the costs of leadership while the leader would be forced to accept a somewhat less esteemed position. Homans has noted that this increased cost-lower esteem phenomenon "is most often observed in the case of leaders whose presumptive authority -- the presumption that they will give orders and that the orders are to be obeyed -- has been established by appointment or inheritance."¹⁰⁰

In the discussion on the importance of the study reference was made to a dilemma between formal and functional authority and it was suggested that a solution to this dilemma may lie in the holder of formal office achieving a position of informal leadership. The discussion on leadership in this section is essential for the interpretation of the data collected in the investigation of the following hypothesis. The theoretical justification for the hypothesis is contained in the previous section on esteem.

Hypothesis 10: The level of the principals' social and technical esteem will be positively related to their professional role orientation.

Subgroup Formation

Another group structure product of the process of elaboration is

¹⁰⁰Ibid., p. 301.

the development of subgroups. Their formation follows a developmental pattern similar to the formation of the group itself.

Basically, it has been argued that the most important of all givens in explaining or predicting emergent behavior would be the values held by the individuals and the relationship of those values to one another and their prevalence in the group. If an individual's scale of values and the rewards available to him are known then "other things being equal," his behavior could be predicted with a given degree of accuracy. Extending this Zaleznik and Moment have provided the following explanation of subgroup formation:

The psychological basis for subgrouping lies in the inclination of group members to seek support from others who have attributes and values in common with them. Such attributes may differ from those common to the whole group or may simply represent varying degrees of the latter. Once these factors in common are identified, interaction tends to be directed to subgroup members in some internally consistent way.¹⁰¹

Homans has noted that the more heterogeneous the values held by members of a group the more likely they were to form subgroups since the members were better able to find others whose values and activities were similar to their own, therefore, forming an alternative to other members within the group.¹⁰² Previously it was noted that rewards and conformity were dependent, in part, upon the alternatives available.

¹⁰¹Zaleznik and Moment, op. cit., p. 77.

¹⁰²Homans (1961), op. cit., p. 102.

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Therefore, it would be expected that heterogeneous groups would have a greater range in opinions and foster the formation of non-conformist subgroups. The hypotheses proposed with respect to subgroup formation are a follow up to the following conclusion reached by Newcomb, Turner and Converse:

Attitudinally speaking, birds of a feather tend to flock together, and we would therefore expect that subgroup structuring would to some degree parallel the differences among group members in certain interests and values.

It should thus be possible to predict from attitudinal similarity on the part of group members what the clique structuring will be like.¹⁰³

With our professional teacher groups two variations in values that may influence the nature of the subgroups can be delineated. The first and most obvious is the variation in the degree to which the members hold the values associated with the professional role orientation. Members valuing these orientations would migrate to subgroups holding the orientations to a similar degree while members placing lower value on the orientations would migrate to alternative groups reflecting a more complementary orientation. The second variation could occur among the emphases on the various dimensions of professionalism. For example, one would suspect that the teachers placing a high value on Knowledge Orientation would tend to group together while other members more highly valuing the beliefs contained in the Formal-organization dimen-

¹⁰³Newcomb, Turner and Converse, op. cit., p. 317.

sion would tend to congregate in another subgroup.¹⁰⁴

Hypothesis 11: Subgroups will vary significantly in their degree of professional role orientation.

Hypothesis 12: Members of subgroups will be of a similar professional role type.

A discussion relating subgroup formation and size of group written by Thomas and Fink has implication for the selection of the sample for this study.¹⁰⁵ They maintain that people had a "relational capacity" in that they could seldom maintain close ties with more than 8-12 persons at a time. Therefore, as a group size increased beyond this range the greater would be the probability of "the development of cliques and factions . . . for as size increases a small proportion of the possible linkages will be made."¹⁰⁶ It can also be seen that small groups are able to provide more complete linkages that are within the relational capacity of its members and that the frequency of interaction with each individual would be increased due to limited alternatives therefore this would also have an effect on cohesiveness - - the smaller the group the more cohesive it will be.

¹⁰⁴See "A Typology of Professional Roles of Teachers," p.31.

¹⁰⁵E. J. Thomas and C. F. Fink, "Effects of Group Size," Psychological Bulletin, 60: 371-384, 1963.

¹⁰⁶Ibid., p. 382.

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Regular Group Members, Deviates and Isolates.

In our discussion of esteem it was noted that persons offering a high cost in their exchange are not highly esteemed and members offering a loss outcome are rejected -- the most lowly esteemed members. This evaluation of rewards and costs was primarily gauged by conformity to the group's values and norms. Zaleznik has described deviant behavior in the following manner:

Conformity in groups results when individuals of their own volition internalize a set of group norms and maintain an accepted degree of behavior that approximates the expectations. Variation in behavior is of two kinds: (a) the variation prescribed by existing norms . . . and (b) the variation existing in the different degrees to which individuals in their behavior measure up to the expectations. Variant behavior of this second kind involves acceptance or internalization of existing group norms with behavior at a stable position in some approximation to the norms. Deviant behavior exists when the individual acts in such a way as to indicate an intent to flout group norms or a failure to internalize the standards of behavior.¹⁰⁷

Then, a deviate can be described as a person who is unwilling or unable to accept the dominant norms and values of a group with which he is identified.

Reference has been made to the fact that when normative behavior has not been demonstrated the members, feeling a loss in reward, will reduce interaction with the deviate and enforce punishments

¹⁰⁷Zaleznik, op. cit., p. 593.

by withdrawal of approval or even exhibiting hostility. Since the individual's nonconformity was the result of his low attraction to the group, then this newly incurred cost will cause him either to conform and regain some rewards or to become even more hostile to the group and its values. The "snowballing" effect of deviant behavior has been described by Turner:

Unfavourable sentiments will be directed against members who do not share or who violate the norms generally accepted in the group. Furthermore, these unfavourable sentiments frequently lead to the emergence of further activities which have the function of punishing the violators of the norms and which may well lead to further defensive or aggressive activities by the violators. Thus, a circular situation is likely to arise in which both the violators and the upholders of the group's norms each have their sentiments about the other reinforced by the other's activities.¹⁰⁸

The intent of the group's actions would be to increase the costs of behaving in violation of group norms but the costs would only be real if the deviate values the group. If he has little value or negatively values the group then he may experience satisfaction or reward from the fact that he was able to incur costs for the group members. However, if he values the group and has no alternatives available, the individual must be willing to pay the price associated with the deviant behavior or conform. Since the lowly esteemed in a group receive little reward in the form of approval, then they would be particularly likely not to conform to the norms and would be more likely to turn to alternative

¹⁰⁸Turner, op. cit., p. 220.

sources for the esteem denied them in the group, thereby further reducing their attraction. Using the statements made here, the description of a deviate can be extended to a person who has been denied regular membership because of his unwillingness or inability to accept the dominant norms and values of the group. Stated in terms of esteem, a deviate would be a person who is held in low esteem because of his unwillingness or inability to accept the aforementioned norms and values.

Since it has been proposed that professional role orientation forms the foundation for the norms and the judgment of esteem and since it is in the light of these two dimensions that deviation is adjudged, then it has been proposed that teachers with high professional role orientation will tend to be regular group members, and teachers with low professional role orientation will tend to be deviates. This proposition is a corollary to Hypothesis 7.

Hypothesis 13: Teachers with high professional role orientation will tend to be regular group members; teachers with low professional role orientation will tend to be deviates.

This discussion on deviation provides the second critical element in the determination of the existence and strength of the norms of professionalism in teacher group - - Hypothesis 4. The relationship between the deviant position and nonconformity to group values and norms has been so firmly established that if a deviate is not relatively isolated and is not granted low esteem it can be concluded that either

there is an absence of a strong group formation or there is an absence of group standards on the dimensions under study.¹⁰⁹ Therefore, the findings related to Hypothesis 14 have implications for Hypothesis 4.

Satisfaction

So far the discussion has been concerned with the evolution of the internal system and emergent behavior. No mention has been made of the consequences of these for the individuals involved. In the model Turner has pointed out that these consequences can be grouped into three categories: (1) productivity, (2) satisfaction, and (3) individual development. This study has been particularly concerned with the relationship to satisfaction.

The writer has pointed out that satisfaction is a rather difficult term to define and has accepted need gratification or favourable reward receipt as synonyms. Since the needs referred to are not those with an anatomical or physiological base, then, as Zeleznik and Moment have pointed out, satisfaction "refers to the state of mind of a person, to some process going on within him."¹¹⁰ Rather than having an absolute base, these needs have relative levels of gratification, the acceptable level of which is dependent upon the history of rewards received in

¹⁰⁹Festinger, Schacter and Back, op. cit., p. 111.

¹¹⁰Zaleznik and Moment, op. cit., p. 374.

It is the object of the present paper to show that the above-mentioned results can be obtained by a more direct method than that given in the literature. The method is based on the use of the following theorem:

THEOREM

Let $f(x)$ be a function defined on the interval $[a, b]$ and let $F(x)$ be its primitive function. If $f(x)$ is continuous on $[a, b]$ and $F(x)$ is bounded on $[a, b]$, then $f(x)$ is integrable on $[a, b]$ and

$$\int_a^b f(x) dx = F(b) - F(a).$$

The proof of this theorem is given in the appendix.

It can be seen from the above that the theorem is a direct consequence of the definition of the integral. The only point to be noted is that the function $f(x)$ must be continuous on $[a, b]$ and its primitive function $F(x)$ must be bounded on $[a, b]$. This condition is satisfied by all functions which are continuous on $[a, b]$ and whose primitive function is bounded on $[a, b]$. For example, if $f(x) = \sin x$ and $F(x) = -\cos x$, then $f(x)$ is continuous on $[a, b]$ and $F(x)$ is bounded on $[a, b]$. Therefore, $f(x)$ is integrable on $[a, b]$ and

$$\int_a^b \sin x dx = -\cos b + \cos a.$$

$$\int_a^b \cos x dx = \sin b - \sin a.$$

similar situations in the past and upon what others are receiving who have made similar social investments - - distributive-justice. Therefore, satisfaction is not solely dependent upon the amount of reward received but also upon the amount desired or the "level of aspiration." This study has been primarily concerned with the level of satisfaction achieved by the receipt of "internal rewards"¹¹¹ and how this is influenced by professionalism.

It has been noted that the matters which an individual considers to be of value or reward were dependent upon his personal value structure. In exchange theory it was also proposed that a person attempts to maximize the profits that he achieves in a situation. This maximizing of profit can be thought of as an attempt to maximize satisfaction. The internal needs being satisfied or rewards being sought have been described as "the need for belonging to a group; for associating with other human beings; for expressing and sharing in sentiments of loyalty, friendliness and affection; for . . . receiving emotional support; for receiving the marks of group approval . . . prestige and esteem."¹¹² All of these have their rewards inherently tied up in the group. In the attempts to relate professionalism to group structure it has become eminently clear that norms and conformity to norms were the

¹¹¹Zaleznik, Christensen and Roethlisberger, op. cit., p. 324.

¹¹²Ibid.

prime and almost absolute determiners of the nature of the rewards, the nature of the behavior being rewarded, and the amount of reward to be handed out. Therefore, the degree to which a person maximizes the satisfactions that a group can provide him becomes dependent upon the degree to which he conforms to its norms and values.

The research on satisfaction, as cited in the "Review of the Literature", has demonstrated that the ability and willingness of a group to provide these rewards was dependent upon the cohesiveness and status structure of the group, and the membership position and esteem in which the person was held. It was also stated that all of these were found to be related to the "in-group" value - - the causa causam. Since it has been proposed that a high professional role orientation held by the individuals and the groups promotes the development of these structural elements and esteem position, then it follows that satisfaction must be positively related to professional role orientation. Since Zaleznik, Christensen and Roethlisberger,¹¹³ and Barnes¹¹⁴ have found that "satisfaction with the job and satisfaction with associates seemed to be directly related to each other,"¹¹⁵ and independent of management's rewards, then the writer has extended the areas of satis-

¹¹³Ibid., p. 286.

¹¹⁴L. B. Barnes, Organizational Systems and Engineering Groups: A Comparative Study of Two Technical Groups in Industry, pp. 167-169.

¹¹⁵Zaleznik, Christensen and Roethlisberger, loc. cit.

faction under study to encompass those related to job satisfaction.

Hypothesis 14: Teachers' satisfaction will be positively related to their professional role orientation.

It has been noted that similarity of values promotes interaction which in turn creates a condition of social certitude, fosters consensual validation and leads to the development of friendship relations. It was also noted that valuing and acting in accord with group norms was essential for high esteem and that the person in high esteem mediated highly valued rewards. In this connection it has been proposed that the more highly a principal holds a professional role orientation the higher will be the esteem in which he is held. Since he would be more apt to make his decisions on the basis of professional values, then other teachers holding these values would feel greater certitude, would hold the principal in less suspicion, and would see his decisions as the product of professional consideration and not as acts of formal authority. This reduction in perceived threat would foster more interaction due to the reduction in perceived cost probabilities and promote more cordial relationships which in turn would foster improved consensual validation and social certitude. The product of this circular process would be an increase in the esteem in which the principal is held and greater satisfaction among the teachers with his behavior. This result is subject to the limitations placed by his presumptive authority stemming from his office and assumes "other things equal."

Hypothesis 15: Teachers' satisfaction with principals' performance will be positively related to the principals' and the teachers' professional role orientation.

V. THE HYPOTHESES

The following constitute the hypotheses tested in this study:

Hypothesis 1: There will be a positive relationship between the rates of emergent interaction within teacher groups and the average professional role orientation of these groups.

Hypothesis 2: The strength of the sentiments of friendship within teacher groups will be positively related to their average professional role orientation.

Hypothesis 3: The degree of consensus within teacher groups on the professional role orientation will be positively related to their average professional role orientation.

Hypothesis 4: The values, attitudes and opinions contained in a professional role orientation will be integrated into the norms of teacher groups.

Hypothesis 5: The level of cohesiveness within a teacher group will be positively related to the group's average professional role orientation.

Hypothesis 6: There will be a positive relationship between the professional role orientation of the teachers and the

the following conditions: the applicant must be a resident of the United Kingdom, must be at least 18 years of age, must be a British citizen, and must be a resident of the United Kingdom for at least 12 months.

THE APPLICATION

The following conditions must be satisfied by the applicant: the applicant must be a resident of the United Kingdom, must be at least 18 years of age, must be a British citizen, and must be a resident of the United Kingdom for at least 12 months. The applicant must also satisfy the following conditions: the applicant must be a resident of the United Kingdom, must be at least 18 years of age, must be a British citizen, and must be a resident of the United Kingdom for at least 12 months.

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technical esteem in which they are held by the teacher group.

Hypothesis 7: There will be a positive relationship between the professional role orientation of the teachers and the social esteem in which they are held by the teacher group.

Hypothesis 8: The relationships between professional role orientation and technical and social esteem will be closer in the teacher groups having a higher average professional role orientation.

Hypothesis 9: There will be a positive relationship between the rankings according to technical and social esteem and this relationship will be closer in the teacher groups having a higher average professional role orientation.

Hypothesis 10: The level of the principals' social and technical esteem will be positively related to their professional role orientation.

Hypothesis 11: Subgroups will vary significantly in their degree of professional role orientation.

Hypothesis 12: Members of subgroups will be of a similar professional role type.

Hypothesis 13: Teachers with high professional role orientation will tend to be regular group members; teachers with low professional role orientation will tend to be deviates.

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Hypothesis 14: Teachers' satisfaction will be positively related to their professional role orientation.

Hypothesis 15: Teachers' satisfaction with principals' performance will be positively related to the principals' and teachers' professional role orientation.

VI. DELIMITATION AND LIMITATIONS OF THE STUDY

Delimitation of the Study

This study has been concerned with professional behavior of a cognitive nature only and with the social system as it is reflected by a sociometric test. The study has taken into consideration only the information which was collected by the instruments employed. The investigation primarily restricted itself to the study of the relationships between the professional role orientation of teachers, the social system of the teacher groups and teacher satisfaction. Other factors have been included only when they had direct implications for the formulation of these relationships or for the explanation of the results. The research has restricted its considerations to these relationships as found in a selected sample of schools with teacher populations of between 15 and 43 teachers.

Limitations of the Study

Like all studies resting upon the ceteris paribus prayer, this

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Abstract 358: "The Role of the Brain in the Control of the Heart"

Abstract 359: "The Role of the Brain in the Control of the Heart"

Abstract 360: "The Role of the Brain in the Control of the Heart"

Abstract 361: "The Role of the Brain in the Control of the Heart"

Abstract 362: "The Role of the Brain in the Control of the Heart"

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investigation has some serious limitations. Since the writer has restricted his considerations primarily to the professional role orientation of the teachers and has assumed that the other variables affecting a social structure do not vary among the schools to the extent that they have a differential effect on the social structures of the various schools, or, if there are differential effects, they are randomly distributed, then the relationships he has discovered may be spurious. The researcher's restrictions on the nature of the sample have been an attempt to reduce the effects of size. The presence of other spurious factors could be detected by conducting appropriate tests on the data but since the investigation did not measure many of the possible contaminating variables this process of accountability could only be partial in its fulfillment.

Besides the limitations commonly enunciated with respect to the validity and reliability of the test instruments, there are limitations associated with schools of testing techniques. This study has relied heavily upon the techniques of sociometry. In an evaluation of sociometric procedures Shils has described the subjective nature of the technique and noted that it "does not record actual association; it does not describe actions; it does not provide a picture of the actually existing group relations and group tensions in a concrete situation. . ."¹¹⁶ This subjectivity places limits on the validity of the data. A

¹¹⁶Edward A. Shils, "The Study of the Primary Group," in D. Lerner and H. Lasswell (eds.), The Policy Sciences, pp. 44-69.

second important limitation of this procedure is inherent in trying to measure affect relationships by cognitive response. The affect relationships between persons have many positive and negative elements that a subject may not want known due to a variety of personal reasons and he may consciously manipulate his responses and distort the data. Since the researcher has not used other techniques against which the data from the sociometric tests could be validated these limitations are real but undetermined as to their significance.

Other limitations are inherent in those techniques of information gathering that have come to be known as "reactive research."¹¹⁷ The most common form and most pertinent to this study is the use of the questionnaire. The first limitation arises from what has been called the "reactive arrangement bias."¹¹⁸ Selltiz et al make the following observation about this bias:

The measurement process used in the experiment may itself affect the outcome. If people feel that they are "guinea pigs" being experimented with, or if they feel that they are being "tested" and must make a good impression, or if the method of data collection suggests responses or stimulates an interest the subject did not previously feel, the measuring process may distort the experimental results.¹¹⁹

¹¹⁷E. J. Webb, D. T. Campbell, R. D. Schwartz and L. Sechrest, Unobtrusive Measures: Nonreactive Research in the Social Sciences, p. 1.

¹¹⁸D. T. Campbell and J. C. Stanely, "Experimental and Quasi-Experimental Designs for Research on Teaching," in N. L. Gage (ed.), Handbook of Research on Teaching, pp. 171-246.

¹¹⁹S. Selltiz, M. Jahoda, M. Deutsch, and S. W. Cook, Research Methods in Social Relations, p. 97.

and important features of this structure is shown in Figure 1.

For the purpose of this study, the following assumptions were made:

1. The system is in a steady state.

2. The system is in a steady state.

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22. The system is in a steady state.

A second phenomenon restricting the validity of the measures has been called "role selection."¹²⁰ The person in the experimental situation is presented with many cues from which he tries to select a role or behavior that is appropriate for one of the "many true selves or proper behaviors available in any respondent."¹²¹ This selection of the "proper" role may have added significance in this study since it has looked at the "proper" or professional role of teachers and the nature of this "proper" role may be well known in the teacher groups. Cronbach has enunciated another phenomenon that reduces the validity of the questionnaire as an instrument of measurement: he called it the "response set."¹²² In answering tests people will more frequently endorse a statement than disagree with its opposite; select moderate or indecisive alternatives over the strong; develop stereotyped responses, i.e., endorse the top responses over the bottom or to alternate selection in some simple fashion; and decrease the consideration given with each item as they proceed through the test. All of these factors introduce biases. They are all limitations inherent in the technique. The researcher can only attempt to design the test so as to reduce the effects of bias.

¹²⁰Webb, et al., op. cit., p. 16.

¹²¹Ibid.

¹²²L. J. Cronbach, "Response Sets and Test Validity," Educational and Psychological Measurement, pp. 475-494.

The conclusions reached in this study are subject to the aforementioned limitations. Furthermore, the generalizability of these conclusions is restricted by the selected nature of the sample.

VII. ASSUMPTIONS

The following are some of the basic assumptions made in this study:

1. It was assumed that variables, other than those under study, that affect a social structure did not vary among the schools to the extent that they had a differential effect on the social structures of the various schools, or, if there were differential effects, they were randomly distributed.
2. It was assumed that the instruments were sufficiently reliable and valid as to be suitable for the study; that teachers were able to perceive with reasonable accuracy their rates of social interaction with other members of the staff; and the data collecting procedures did not introduce a bias leading to spurious results.
3. It was assumed that the teacher groups had reached a state of practical equilibrium.
4. It was assumed that each teacher had an opportunity to sample the reward-cost outcomes with all other members of the staff.

CHAPTER III

REVIEW OF THE LITERATURE

I. LITERATURE DEALING WITH THE PROFESSIONS AND PROFESSIONALISM

The Dimensions of Professionalism

An examination of the literature has shown that there are many definitions and descriptions of what constitutes a professional role orientation, each emphasizing one or more aspects of the description provided by Hrynyk but none that appeared to do violence to it. Using the dimensions that Hrynyk felt constituted a professional role orientation as a typology, a review of the descriptions supplied by other writers has been made.

(a) Knowledge and Skill. The inclusion of this dimension seems to have the general acceptance of the writers on professionalism. Cogan,¹ Carr-Saunders and Wilson², Lieberman³, Greenwood⁴, and Corwin⁵ have emphasized the importance in the professions of the "esoteric and theoretical body of knowledge" and the associated intellectual techniques. All would

¹Morris L. Cogan, "Toward a Definition of Profession," Harvard Educational Review, 23: 33-50, Winter, 1953.

²A. M. Carr-Saunders and P. A. Wilson, The Professions, p. 284.

³Myron Lieberman, Education as a Profession, pp. 2-3.

⁴Ernest Greenwood, "Attributes of a Profession," in S. Nosow and W.H. Forms (eds.), Man, Work, and Society: A Reader in the Sociology of Occupations, p. 7.

⁵Ronald G. Corwin, A Sociology of Education, p. 222.

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be in agreement with the following statement provided by Lieberman:

A profession depends to a very high degree upon intellectual rather than physical techniques in carrying on its work. Professional work emphasizes such intellectual techniques as defining problems, searching for relevant data, and formulating possible solutions.⁶

Carr-Saunders and Wilson, and Cogan have stressed the belief that the profession and the professional utilize these intellectual techniques in order to render "a specialized unique service to the community"⁷ or to the "vital practical affairs of man."⁸ The requirements of prolonged and specialized training, tests of competence, and control over licensing have been enunciated by Lieberman,⁹ and Carr-Saunders and Wilson.¹⁰ Corwin has extended the notion of control of licensing to include the legal sanctioning of a code of ethics in order that legal control over the application of the theoretical knowledge to the social problem can be reached and standards maintained.¹¹ He also noted that the onus for maintenance

⁶
Lieberman, op. cit., p. 2.

⁷
Carr-Saunders and Wilson, loc. cit.

⁸
Cogan, loc. cit.

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Lieberman, op. cit., pp. 3, 5.

¹⁰
Carr-Saunders and Wilson, loc. cit.

¹¹
Corwin, loc. cit.

of the required levels of skill and knowledge, research and change should be on the professional.¹² It would appear that the beliefs associated with and underlying the dimension of knowledge and skill orientation, as outlined by Hrynyk, are well documented.

(b) Service Ideal. The literature justifying the inclusion and description of this dimension appears to be extensive. Cogan has underscored the unique and indispensable nature of the vocation by stating that "the service is . . . additionally characterized as of vital and personal importance to the client."¹³ Lieberman has placed the performance of "unique, definite, and essential social service" as the first quality on his list of the characteristics describing a profession.¹⁴ Cogan has traced the logic of the altruistic nature of the service from its unique and essential qualities in the following manner:

There seems to be a very vigorous insistence among many writers that professions are, to a significant extent altruistic. The implication underlying this insistence may be based on the conviction that professional services are vital to the very survival and integrity of man in a sophisticated and complex civilization. If these services are indeed so vital, then perhaps the performance of such services ought to be made to depend upon the fundamental relations of one man to another, not upon secondary relationships existing between money and services, or between any superficial considerations and services. Perhaps the hard undeniable realities of existence ought to evoke altruism from a profession, because no other quality will suffice for the decent survival of

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Ibid.

13

Cogan, op. cit., p. 40.

14

Lieberman, op. cit., p. 2.

man in his present society.¹⁵

Others who have described this altruism as an essential factor are Bacon,¹⁶ Lieberman,¹⁷ Flexner¹⁸ and Garceau.¹⁹ Not only have these theoreticians recognized this notion but the following opinion handed down in 1933 demonstrates that it has been recognized as the essence of professionalism by the courts of law:

A profession is not a money getting business. It has no element of commercialism in it. True, the professional man seeks to live by what he earns, but his main purpose and desire is to be of service to those who seek his aid and to the community of which he is a necessary part.²⁰

(c) Colleague-Profession. This dimension does not seem to enjoy the same degree of consensus among the writers about its inclusion as that enjoyed by the other dimensions. This lack of consensus is not due to

¹⁵Cogan, op. cit., p. 42

¹⁶Francis Bacon, Maxims of the Law, Works, ed. Spedding, Vol. VII, p. 319, as cited by Carr-Saunders and Wilson, op. cit., p. 1.

¹⁷Lieberman, op. cit., p. 4.

¹⁸Abraham Flexner, "Is Social Work a Profession," School and Society, 1: 901-911, 1915.

¹⁹Oliver Garceau, "Some Aspects of Medical Politics," unpublished Ph. D. dissertation, Department of Government, Harvard University, 1939, as cited by Cogan, op. cit., p. 41.

²⁰State Ex Rel. Steiner v. Yelle, 25 P. 2 d. 91, 174 Wash. 402 (1933), as cited by Cogan, op. cit., p. 36.

THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION
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CONTENTS
ORIGINAL ARTICLES
SYMPOSIUM ON THE TREATMENT OF
TUBERCULOSIS
SYMPOSIUM ON THE TREATMENT OF
TUBERCULOSIS

SYMPOSIUM ON THE TREATMENT OF TUBERCULOSIS

SYMPOSIUM ON THE TREATMENT OF TUBERCULOSIS
SYMPOSIUM ON THE TREATMENT OF TUBERCULOSIS
SYMPOSIUM ON THE TREATMENT OF TUBERCULOSIS
SYMPOSIUM ON THE TREATMENT OF TUBERCULOSIS

SYMPOSIUM ON THE TREATMENT OF TUBERCULOSIS

SYMPOSIUM ON THE TREATMENT OF TUBERCULOSIS
SYMPOSIUM ON THE TREATMENT OF TUBERCULOSIS
SYMPOSIUM ON THE TREATMENT OF TUBERCULOSIS
SYMPOSIUM ON THE TREATMENT OF TUBERCULOSIS

SYMPOSIUM ON THE TREATMENT OF TUBERCULOSIS

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SYMPOSIUM ON THE TREATMENT OF TUBERCULOSIS

SYMPOSIUM ON THE TREATMENT OF TUBERCULOSIS
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SYMPOSIUM ON THE TREATMENT OF TUBERCULOSIS

dissension but for want of inclusion. Wilson and Carr-Saunders have stated that two conditions pre-requisite to professionalism are the free association and group consciousness of members "since it is only under the stimulus of these conditions that the practitioners associate together and become a profession in the full sense of the word."²¹ Lieberman has observed that it is characteristic of all professional groups for the members to confine their nonoccupational associations to members of the same profession but has not included this as a condition for professionalism.²² Greenwood has pointed out that there are several conditions existing in a profession that demand behavior that is characterized by the 'Colleague-Profession' orientation:

1. . . . because counter forces within the community resist strongly the professions claim to authority. . . . professional colleagues must support each other vis-a-vis clientele and community. The professional must refrain from acts which jeopardize the authority of colleagues, and must sustain those whose authority is threatened.²³
2. Standards for professional performance are reached by consensus within the profession and are based on the existing body of theory. The lay community is presumed incapable of comprehending these standards and, hence, of using them to identify malpractice. It is generally conceded that a professional's performance can be evaluated only by his peers.²⁴
3. The consultation-referral and authority reinforcement customs

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P. A. Wilson and A. M. Carr-Saunders, "The Emergence of Professions" in S. Nosow and W. H. Form (eds.), op. cit., p. 202.

²²

Lieberman, op. cit., p. 474.

²³

Greenwood, op. cit., pp. 212-213.

²⁴

Ibid., p. 211.

involves professional colleagues in a system of reciprocity which fosters mutual interdependence. Interdependence facilitates social control; chronic violation of professional etiquette arouses colleague resentment, resulting in the cessation of consultation requests and referrals and reduced authority reinforcement.²⁵

Carr-Saunders and Wilson have stated that colleague orientation mainly stems from a desire for social intercourse with those who are doing the same work and facing the same problems, for the reading and discussing of papers, and for the promotion of study activities that will foster improvement in the theoretical body of knowledge and professional competence.²⁶ The product of these factors was seen as being the development of a loyalty to one's professional colleagues and the prescription of modes of behavior that reflect cooperative, equalitarian and supportive beliefs.

(d) Autonomy Client. There is unanimity among the writers about the inclusion of the belief that the ultimate responsibility of a professional person is for the welfare of the clients he serves. The essence of this view has been stated by Marshall:

It the foundation of the individualism may mean the belief that the individual is the true unit of service, because service depends on individual qualities and individual judgment, supported by an individual responsibility which cannot be shifted on to the shoulders of others. That, I believe, is the essence of professionalism, and it is not concerned with self-interest, but with

25

Ibid., p. 214.

26

Carr-Saunders and Wilson, op. cit., pp. 300-301.

the welfare of the client.²⁷

The view that professionalism has an autonomy element is also well supported. The writers have described the necessity for this autonomy norm as stemming from two sources: (a) the practitioners responsibility to his client, and (b) the unique nature of his services. Lieberman has pointed out that since the very essence of a profession is a high degree of "direct and personal" responsibility to the client, then there must be a correspondingly high degree of autonomy.²⁸ Recognizing the unique characteristics of the services provided, Lieberman expanded his thesis on the need for an autonomy norm by stating:

The professional worker is confronted by a wide variety of problems which require the application of a high degree of intelligence and specialized training. . . . Professional work is not amenable to close supervision . . . Professions necessarily require a broad range of autonomy, that is, freedom to exercise independent skill and judgment.²⁹

The statements provided by the other writers closely correspond to these of Lieberman.

(e) Formal Organization. There is a widespread conviction that the professions cannot exist apart from their formal associations because these organizations provide the socio-ethical control and the rules

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T. M. Marshall, "Professionalism and Social Policy," in S. Nosow and W. H. Form (eds.), op. cit., p. 226.

28

Lieberman, op. cit., p. 57.

29

Ibid., p. 4.

of practice based upon the valued body of theory and knowledge, the power to fight impingements by society on professional autonomy, plus the intellectual and social association so essential for the professional provisioning of services. Expressing this belief, Carr-Saunders and Wilson have categorically stated, "a profession can only be said to exist when there are bonds between the practitioners, and these bonds can take but one shape - - that of formal association."³⁰ They, like Hrynyk, have noted that the formal associations have arisen from the colleague orientation of the practitioners.³¹ Delancy, recognizing this origin, has noted that this explains the emphasis on socio-ethical control in professional associations.³² The obvious deficiencies of a system that was based solely on socio-ethical control revealed the need for some definite machinery to define and enforce high standards of professional conduct. This requirement has been met by the institution of formal discipline through a professional association empowered to criticize, censure and bar recalcitrants. The formal association has made possible the development of a code of ethics based upon the professional values held by its members that was enforceable by these same members for the good of the profession and the clients served by the profession. In describing authority relationships, Corwin has noted that the "professional's ex-

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Carr-Saunders and Wilson, op. cit., p. 298.

31

Ibid, p. 301.

32

Frances P. Delancy, The Licensing of Professions in West Virginia, pp. 14-15.

pectation" with respect to the legitimacy of centralized authority resides in "rules sanctioned by powerful and legally sanctioned professions,"³³ thus, underlining the success of the professional organizations in reflecting standards and values. Greenwood has pointed out that the following characteristic distinguishes the professional association from the nonprofessional:

Professional members convene regularly in their associations to learn and to evaluate innovations in theory. This produces an intellectually stimulating milieu that is in marked contrast to the milieu of a nonprofessional occupation.³⁴

Correlates of Professionalism

After an exhaustive review of the literature Hrynyk has presented the following summary of factors found to be related to the professional roles and attitudes of teachers:

Personal Factors: age, sex, marital status, educational background, curriculum specialization, teaching experience, religious affiliation, ethnic background, serving of internship.

School Factors: size of school staff, size of school unit, location of school, grade organization of school, school district type - - division, county, district.

Core Organization Factors: Office holding, participation in the affairs of the organization, commitment to the organization, membership in specialist groups.³⁵

The studies that have special significance for the research project are those relating the factors of the amount of professional training and education, the years of experience, the type of school and teaching level, and the size of school to the professional role orientation of teachers.

³³Corwin, op. cit., p. 222.

³⁴Greenwood, op. cit., p. 209.

³⁵Hrynyk, op. cit., p. 77.

After surveying a sample of 545 Michigan secondary school teachers, Colombotos found that professionalism was most highly related to the background factors of amount of education, religious affiliation, sex and marital status.³⁶ Ratsoy found that the longer a person spent in professional preparation the higher their score on the Education Profession Attitude Questionnaire.³⁷ Further support for the positive relationship between years of training and professional role orientation has been supplied by Nicholas L. Hrynyk.³⁸ He found that teachers with less training expressed a lower desire for autonomy than more highly trained teachers - - the criterion being the teacher's expressed desire for classroom supervision by the principal.

The research showing a relationship between years of experience and professional role orientation is extensive. In a study of professional and employee role conflict among teachers, Corwin found that the number of years in the school system was associated with a high professional role orientation.³⁹ Ratsoy found that even with the increase in professional

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John L. Colombotos, "Sources of Professionalism: A Study of High School Teachers," unpublished doctoral dissertation, The University of Michigan, 1961.

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E. W. Ratsoy, "Professional Attitudes of Prospective Teachers," The Canadian Administrator, 5: 31-34, May, 1966.

38

Nicholas L. Hrynyk, "Supervisory Needs: West Jasper Place Public Schools," unpublished M. Ed. thesis, University of Alberta, Edmonton, 1963.

39

Ronald G. Corwin, "The Development of an Instrument for Examining Staff Conflicts in the Public Schools," Mimeographed, Ohio State University, 1963.

attitude with increased training the inexperienced graduates at the degree level scored significantly lower than the heterogeneous sample of experienced teachers.⁴⁰ Miller⁴¹ and Wandt and Aikman,⁴² in similar studies, noted that the longer the teachers remained in the profession the smaller the "discrepancy between idealized teaching position and teaching position and teaching position actually obtained . . .,"⁴³ hence, a greater awareness of role. Ingram, in a study of teacher commitment to the Alberta Teachers Association, found teacher participation in and orientation to the association was positively related to their years of teaching experience.⁴⁴ It would appear that it is safe to conclude from this and other evidence that the experiences undergone by teachers in their occupational circumstances and their social environment influence their development of a professional role orientation.

Cook et al. have reported that generally the more academic the type of school, the higher the grade level, and the greater the amount of

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Ratsoy, op. cit., p. 33.

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M. Miller, "Role Awareness as an Objective of Group Work in Teacher Education," Journal of Teacher Education, 6: 128-133, June, 1955.

42

W. Wandt and L. P. Aikman, "Will They Get the Jobs They Want?" Journal of Educational Research, 46: 113-122, October, 1952.

43

Ibid., p. 119.

44

Ernest J. Ingram, "Member Involvement in the Alberta Teachers' Association," unpublished doctoral dissertation. The University of Alberta, 1965.

teacher education, the more favourable are the attitudes held by teachers.⁴⁵ In a study of teacher attitudes by grade levels Phillips found that elementary teachers had more favorable attitudes, as measured by the Minnesota Teacher Attitude Inventory, than the high school teachers.⁴⁶ In a preliminary statement Hrynyk has reported significant differences on the Professional Role Orientation Scale among teachers at the elementary, junior high, and senior-high school levels.⁴⁷ These differences were found to exist on all of the role orientation dimensions except the 'Service Ideal' dimension where the teachers at the elementary school level scored higher than the other teachers and principals. Since the MTAI has a high 'service' component, the position of the elementary teachers on the 'Service Ideal' dimension would tend to confirm Phillips' findings. Robinson found that principals generally did not score higher than the teachers.⁴⁸ Ingram found that members who were most active in and committed to the teachers' association typically held administrative positions within the school systems.⁴⁹

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T. Cook et al., "Significant Factors in Teachers' Classroom Attitudes," Journal of Teacher Education, 7: 274-279, September, 1956.

46

Raymond Phillips, "A Study of Attitudes and Personality Variables Among In-service Teachers," Dissertation Abstracts, 16: 2538, 1956.

47

Hrynyk, op. cit., p. 132.

48

N. Robinson, "A Study of the Professional Role Orientation of Teachers and Principals and Their Relationship to Bureaucratic Characteristics of School Organizations." Unpublished doctoral dissertation, Edmonton: University of Alberta, 1966. p. 106.

49

E. J. Ingram, "Teacher Involvement in Professional Organizations," The Canadian Administrator, 5: 21, February, 1966.

The evidence presented here would tend to indicate that there are significant differences in the degree of professional role orientation among groups of teachers and these differences generally favour those teaching at higher grade levels. It should be noted that a phenomenon paralleling this relationship between grade level and professionalism is the relationship between grade level and the amount of teacher training.

One study that has yielded results that may have particular significance for the design of this study is that by Corwin.⁵⁰ In his study of 257 teachers in seven public high schools located in Ohio and Michigan he found that the larger the school the higher the professional role orientation of the teachers. Other factors he found influencing the teachers' professionalism were the number of years in the school, the urban background of the teachers, and their sex. Since he offers no comparison between these variables and the size of the school nor between the size of the school and the amount and nature of teacher training, we are unable to say if there is a direct relationship between size of school and the professionalism of teachers or if it is mediated by other variables.

In summary, the evidence presented here would indicate that the professional role orientation of teachers is not only a product of the professionalization process operating while they are enrolled in the

⁵⁰Corwin (1963), loc. cit.

training programs, but also a product of the socialization process functioning while they are performing "in the field." It would also appear that there are differences among groups of teachers at the various grade levels and these variations tend to favour the levels employing the more highly trained teachers. Principals appear to have a higher professional role orientation than the classroom teachers. The size of the school staff may be a factor mediating the development of professional role orientation among teachers.

II. LITERATURE DEALING WITH THE RELATIONSHIPS DESCRIBED IN EXCHANGE THEORY, SMALL-GROUP BEHAVIOR AND THE SOCIAL STRUCTURE OF GROUPS

Background Factors and Required and Given Behavior

Some of the major factors in the external system that have been found by research to influence the internal system are the geographic location of people in relation to one another⁵¹, their functional proximity⁵², similarity in workers' background and values,⁵³ the nature of the

⁵¹ Leon Festinger, Stanley Schachter and Kurt Back, Social Pressures in Informal Groups, p. 43; and J. T. Gullahorn, "Distance and Friendship as Factors in the Gross Interaction Matrix," Sociometry, 15: 123-134, 1952.

⁵² F. Roethlisberger and W. J. Dickson, Management and the Worker, pp. 392 ff.; and, A. Zalesnik, Worker Satisfaction and Development (Boston: 1956), pp. 14 ff.

⁵³ Paul R. Lawrence, et al., Organizational Behavior and Administration, pp. 62-74; A. Zalesnik, C.R. Christensen and F.J. Roethlisberger, The Motivation, Productivity, and Satisfaction of Workers: A Prediction Study, p. 273; and, G.A. Lundberg and Virginia Beazley, "Consciousness of Kind in a College Population," Sociometry, 11:59-74, 1948.

authority structure⁵⁴ and the communication structure.⁵⁵

The Mutual Dependence of Sentiments and Interaction

Given sentiments and emergent interaction. Findings of research that have related similarity in values, attitudes and beliefs among persons with their rates of interactions have been supplied by Newcomb,⁵⁶ Broderick,⁵⁷ Precker,⁵⁸ Zaleznik Christensen and Roethlisberger,⁵⁹ and Lawrence et al⁶⁰ Newcomb found that his theory of interpersonal attraction was essentially supported since individuals with similar attitudes toward

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L. B. Barnes, G.W. Dalton, and A. Zaleznik, "The Authority Structure as a Change Variable," a paper presented at the 57th annual meeting of the American Sociological Association, August 1962, in Washington, D.C., pp. 11-12.

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H.J. Leavitt, "Some Effects of Certain Communication Patterns on Group Performance." Journal Abnormal Social Psychology, 46: 38-50, 1954.

56

T. M. Newcomb, The Acquaintance Process (N.Y. : 1961).

57

C.B. Broderick, "Predicting Friendship Behavior: A Study of the Determinants of Friendship Selection and Maintenance in a College Population," unpublished doctoral dissertation, Cornell University, 1956 as cited in Secord and Backman, op. cit., p. 245.

58

J.A. Precker, "Similarity in Valuing as a Factor in the Selection of Peers and Near-Authority Figures, "Journal of Abnormal and Social Psychology, 47: 406-414, 1952.

59

Zaleznik, Christensen and Roethlisberger, op. cit., pp. 209 ff.

60

Lawrence, et al., op. cit., pp. 62-74.

objects of importance and common relevance did tend to associate. He found that after four months the attraction preferences in the group had changed so that the members were attracted toward those individuals whom they accurately perceived to be in agreement with them. Broderick found that similarity in values as a predictor of interaction and friendship choices was dependent on the following:

- (1) the particular class of similarity - - whether it is a status characteristic, a value, or a personality trait; (2) the degree of similarity, (3) the significance of the similarity - - in some groups, for instance, similarity in a particular value may be considerably more important than in others: (4) breadth of similarity - - the number of different ways in which two persons are similar.⁶¹

Precker found that the values of students tended to resemble the values of their sociometric choices and the similarity was greatest between persons whose choice was mutual. Zaleznik, Christensen and Roethlisberger established that the in-group value of Irishness was a mediating variable affecting all elements of the structure of the group under study including interaction. There was a high rate of interaction among the Irish or regular group members and those not holding this value were treated as members of deviant sub-groups or as isolates. Lawrence et al., in the Slade Company, obtained results that paralleled that of Zaleznik, Christensen and Roethlisberger except that the in-group value was Italianness and familial affiliation. These results indicate that the general proposition relating similarity in values, attitudes and beliefs with rates of interaction has been found to have validity.

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Broderick, loc. cit.

Interaction and emergent sentiments. After a review of the literature on the relationship between interaction and emergent sentiments, Newcomb has concluded:

So widespread and so compelling is the evidence for the relationship between frequency of interaction and positive attraction that Homans has ventured to hypothesize that 'If the frequency of interaction between two or more persons increases, the degree of their liking for one another will increase.' Actuarially speaking, the evidence is altogether overwhelming that, ignoring other variables, the proposition is correct in a wide range of circumstances.⁶²

Festinger, Schacter and Back found that the frequency of "passive interaction" was the major determinant of friendship patterns and group membership in a housing development.⁶³ Lundberg and Beazley found that common domicile and college class were the most influential factors fostering friendships among college students.⁶⁴ In a study of friendships in bomber crews, Dorothy Kipnis found that members of the crew that interacted more frequently had significantly stronger friendship preferences than other members of the crew.⁶⁵ Zaleznik, Christensen and Roethlisberger had similar results.⁶⁶ Bovard found that one way of getting

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T.M. Newcomb, "The Prediction of Interpersonal Attraction," American Psychologist, II: 575-86, 1956.

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Festinger, Schachter and Back, op. cit., p. 58.

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Lundberg and Beazley, loc. cit.

65

Dorothy Kipnis, "Interaction between Members of Bomber Crews as a Determinant of Sociometric Choice," Human Relations, 10: , 1957.

66

Zaleznik, Christensen and Roethlisberger, op. cit., p. 339.

people to like one another was to make them interact.⁶⁷ Looking at the reverse relationship, Back found that the more valuable the sentiment or activity members exchanged, the greater the average frequency of the interaction of the members and the more cohesive the group.⁶⁸ Tagiuri, Blake and Bruner reported the existence of the reciprocated attraction phenomenon.⁶⁹ Backman and Secord demonstrated a casual sequence in which the perception of being liked by another results in a liking for that person.⁷⁰ It would appear that there are reports of research findings that offer some substantiation for the proposition that there is a positive relationship between the rate of interaction and the development of emergent sentiments.

Norms and emergent sentiments. Several studies have reported relationships between interaction and similarity of sentiments and conformity to norms, and between values and norms. The widely known experiments of Asch have demonstrated the power of group pressures to in-

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E.W. Bovard, Jr., "The Experimental Production of Interpersonal Affect," Journal of Abnormal and Social Psychology, 46: 521-528, 1951.

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K. W. Back, "The Exertion of Influence through Social Communication," in Leon Festinger, K. Back, S. Schachter and J. W. Thibout (eds.), Theory and Experiment in Social Communication, pp. 21-36.

69

R. Tagiuri, R.R. Blake and J. S. Bruner, "Some Determinants of the Perception of Positive and Negative Feelings in Others." Journal of Abnormal and Social Psychology, 48: 585-592, 1953.

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Carl W. Backman and Paul F. Secord, "The Effect of Perceived Liking on Interpersonal Attraction," Human Relations, 12: 379-384, 1959.

duce conformity of judgment among individuals.⁷¹ Sherif found that in an unstructured situation, the individual was highly dependent upon the group for forming a stable mode of response with respect to visual perception.⁷² Zaleznik, Christensen and Roethlisberger, in their Prediction Study, demonstrated the interplay between values and norms by observing the differences in values and norms of "regular" and "nonregular" group members.⁷³ They noted that members of regular groups tended to share strongly certain values and abided by the resultant norms while deviates and isolates tended to reject or question these standards and emphasized other values. The "snowball" effect of the process of conformity was noted by Back.⁷⁴ He found that highly cohesive groups demanded more agreement and exhibited more group influence over individuals than did low cohesive groups in identical circumstances. Similarly, in their study of campus housing groups, Festinger, Schachter and Back found that the uniformity of attitudes and behavior -- strength of the norms -- dif-

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S.E. Asch, "Effects of Group Pressure Upon the Modification and Distortion of Judgment," in H. Guetzkow (ed.), Group, Leadership and Men: and S.E. Asch, "Studies of Independence and Conformity: A Minority of One Against a Unanimous Majority," Psychological Monographs, 1956, 70, no. 9

72

M. Sherif, The Psychology of Social Norms.

73

Zaleznik, Christensen and Roethlisberger, op. cit., pp. 153-158.

74

K. W. Back, "Influence Through Social Communication," in G.E. Swanson, T.M. Newcomb, and E.L. Hartley (eds.), Readings in Social Psychology, pp. 445-458.

ferred with the various degrees of cohesiveness.⁷⁵ The importance of relevance of an opinion or behavior to the group as a determiner of the pressures for conformity has been shown in an experimental investigation conducted by Sherif.⁷⁶ He found that the group exerted pressure on deviates to conform and the magnitude of this pressure increased as the issue became more important to the group. Schachter had findings similar to those of Sherif.⁷⁷ It would appear that there are discernable relationships among interaction, similarity of sentiments, conformity to norms, values and norms.

Cohesiveness. The research findings on the causes and effects of group cohesiveness are extensive. Festinger et al. found that cohesive groups were characterized by a high rate of interaction, a high friendship grouping, few deviates, and high member activity in group tasks.⁷⁸ In his study of cohesiveness in industrial work groups Stanley Seashore found that the degree of cohesiveness was positively related to the workers opportunity to interact and that the higher the cohesiveness of the group the closer the conformity to group norms and the higher the satisfaction

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Festinger, Schachter and Back, op. cit., p. 11.

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M. Sherif, "Conformity - - Deviation, Norms, and Group Relations," in I. A. Berg and G. M. Bass (eds.), Conformity and Deviation, pp. 159-198.

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S. Schachter, "Deviation, Rejection, and Communication," Journal of Abnormal and Social Psychology, 46: 190-207, 1951.

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Festinger, Schachter and Back, op. cit., p. 175.

of the workers.⁷⁹ He also found that cohesiveness was not related to the age nor the level of education of the workers. The same relationship between interaction, cohesiveness and conformity to norms was reported by Back.⁸⁰ Lott and Lott demonstrated that cohesiveness was directly related to the degree of consensus about norms which groups had achieved.⁸¹ In a study of teachers, Rasmussen and Zander found that members of highly cohesive groups tended to agree more on what their norms were and that these norms were more internalized - - measured by the feeling of guilt when the group standard was not met.⁸² Gerard used the element of cost to explain the tendency for high attraction persons to change toward someone in the group while low-attraction persons tended to shift to the position of the deviant position held by the paid-participant.⁸³ This also gives some support to the thoughts on the effects of attractive alternatives. Bovard has provided evidence that affection attraction to a group was only one element of cohesiveness. He found that 44 per cent of the variance of cohesiveness scores in one study could be accounted

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S.F. Seashore, Group Cohesiveness in the Industrial Work Group, pp. 98-99.

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Back, loc. cit.

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A.J. Lott and B.E. Lott, "Group Cohesiveness, Communication Level, and Conformity," Journal of Abnormal and Social Psychology, 62: 408-412, 1961.

82

G. Rasmussen and A. Zander, "Group Membership and Self-Evaluation," Human Relations, 7: 239-251, 1954.

83

H. B. Gerard, "The Anchorage of Opinions in Face-to-Face Groups," Human Relations, 7: 313-25, 1954.

for by "liking of members."⁸⁴

Esteem. Numerous analyses and studies have shown the relationship between conformity to norms and esteem. In a review of the studies on the Bank Wiring Observation Room and the Norton Street Gang, Homans concluded "that the more closely a man, in the activities he performs, realizes the norms of his group, the higher is his social rank in the group."⁸⁵ Newcomb in a study of 600 girls at Bennington College found that the highly chosen girls realized to a high degree in their behavior the norms prevalent in the group.⁸⁶ Possession of the "in-group" value was found by Zaleznik, Christensen and Roethlisberger to be the major determinant of rank in the informal social organization.⁸⁷ Jennings found that those who had high technical esteem conformed most closely to the values of the group.⁸⁸ She also found that the overchosen (high esteem) girls

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E. W. Bovard, "Interaction and Attraction to the Group," Human Relations, 9: 481-490, 1956.

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Homans (1950), op. cit., p. 442.

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T. M. Newcomb, "Attitude Development as a Function of Reference Groups" in E. E. Maccoby, T. M. Newcomb, and E. L. Hartley (eds.), Readings in Social Psychology, pp. 265-75.

87

Zaleznik, Christensen and Roethlisberger, op. cit., p. 210.

88

Helen H. Jennings, Leadership and Isolation: A Study of Personality in Inter-personal Relations, p. 203 ff.

facilitated their interaction with other members by reducing the cost hence raising the rewards possible. She noted that they engaged in more activities aiding other members and acted in a manner to protect the lower esteemed members. These girls were better able to handle their own problems thereby reducing the probability of reciprocated future costs for the other members interacting with them. Bonney et al. found that the overchosen in a men's dormitory had traits and exhibited behavior that increased rewards and decreased costs to others.⁸⁹ Kidd has noted that the low esteemed men in a college residence have characteristics that increased the costs of interaction with them.⁹⁰ The tendency toward differentiation between work associates and friends within work groups and the low correlations between the selection of persons who were valued for task contribution and those valued as leisure time companions were the findings that led Jennings to describe the "socio" and "psyche" groups.

Leadership. The literature surveyed by the writer showed a scarcity of research relating esteem and leadership. One study by French and Snyder found that the higher the leader's average acceptance (esteem) by members of the group the more effective he was.⁹¹ Zaleznik, Christensen

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M.E. Bonney, R.E. Hoblit and A.H. Dreyer, "A Study of Some Factors Related to Sociometric Status in a Men's Dormitory," Sociometry, 16: 287-301, 1953.

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J.W. Kidd, "An Analysis of Social Rejection in a College Men's Residence Hall," Sociometry. 14: 226-234, 1951.

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J.R.P. French, Jr., and R. Snyder, "Leadership and Interpersonal Power," in D. Cartwright (ed.), Studies in Social Power, pp. 118-149.

and Roethlisberger ascertained that "all five of the actual leaders were identified with the in-group value and had achieved a high status position!"⁹² Investigating the relationship between several group factors and leader popularity, Theodorson found that the more cohesive the group the higher the popularity of the leader and the more the leader was perceived as contributing to the accomplishment of the group task.⁹³ Studies demonstrating the relationship between esteem and conformity to norms have been cited in the previous section.

Subgroup Formation.

Several studies have shown the relationship between similarity of attitudes and subgroup formation. Newcomb found that shared beliefs was a characteristic of subgroups.⁹⁴ In another study Newcomb found that in two 17-man populations of male students members tended to group according to similarity of interests and values associated with age, religious affiliation, and urban and rural background.⁹⁵ The previously cited studies relating values, interaction and friendship are pertinent here.

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Zaleznik, Christensen and Roethlisberger, op. cit., p. 217.

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G.A. Theodorson, "Leadership and Popularity Roles in Small Groups," American Sociological Review, 22: 58-67, 1957.

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T.M. Newcomb, "Stabilities Underlying Changes in Interpersonal Attraction," Journal of Abnormal and Social Psychology, 66: 376-386, 1963.

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T.M. Newcomb (1961), The Acquaintance Process as cited by Newcomb, Turner and Converse, op cit., pp. 316-317.

Regular Group Members, Deviates and Isolates

The propositions contained in this study of the deviate and his relationship to the group has been supported by research findings. In the Prediction Study, Zaleznik, Christensen and Roethlisberger found that regular group members tended to share strongly certain values and abide by resultant norms while the isolates and deviates rejected or questioned them respectively.⁹⁶ They also found that the regular members possessed the "in-group value" in common and were 'on-the-line' producers while the deviates failed to possess the value and were 'out-of-line' producers.⁹⁷ In his study of the Bennington College community Newcomb found that those failing to change to a liberal position remained relatively apart from the activity in the community and had low esteem.⁹⁸ Looking at the relationship between deviation and sociometric choice, Festinger, Schachter and Back⁹⁹ and Schachter¹⁰⁰ noted that the deviates tended to receive little choice. The proposition that deviates have more alternative or outside associations has been supported by Festinger, Schachter and Back, and

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Zaleznik, Christensen and Roethlisberger, op. cit., pp. 157-158.

97

Ibid., pp. 210, 255.

98

T.M. Newcomb, "Attitude Development as a Function of Reference Groups," op. cit., pp. 265-275.

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Festinger, Schachter and Back, op. cit., pp. 104-109.

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Schachter, op. cit., p. 205.

The first point to note is that the model is not a simple extension of the standard Keynesian model. It is a new model, with its own logic and dynamics. The model is based on the following assumptions:

- (1) Firms produce output using labor and capital. The production function is Cobb-Douglas, with constant returns to scale.
- (2) Firms hire labor and rent capital. The wage rate is determined by the marginal product of labor, and the rental rate is determined by the marginal product of capital.
- (3) Firms invest in capital. The investment function is based on the expected rate of return on capital, which is determined by the marginal efficiency schedule (MES) and the interest rate.
- (4) Firms save out of profits. The saving function is based on the marginal propensity to consume (MPC) and the interest rate.
- (5) The interest rate is determined by the interaction of the investment and saving functions.
- (6) The economy is in a steady state when the investment and saving functions are equal.

The model shows that the interest rate is a key determinant of the level of output and employment. A higher interest rate leads to a lower level of investment, which in turn leads to a lower level of output and employment. Conversely, a lower interest rate leads to a higher level of investment, which leads to a higher level of output and employment.

where λ is the marginal propensity to consume, μ is the marginal propensity to invest, and ν is the marginal propensity to save.

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French. Festinger et al. noted that "while the deviates had less connection with others in their own building, they had more connection with others outside of their building."¹⁰¹ French found that the salesmen, who were able persistently to violate the norms in spite of the group's hostility and ostracism, had more attractive (higher status) friendships outside of the work group.¹⁰² The suggestion that we would expect greater deviation among those people who have less communication with the group and vice versa has been supported by data obtained by Festinger et al.,¹⁰³ Schachter,¹⁰⁴ and Blau.¹⁰⁵ Schachter¹⁰⁶ and Festinger et al.¹⁰⁷ also found that the more cohesive the group the fewer the number of deviates but those deviates that were present were highly rejected - - granted very low esteem.

Satisfaction and Productivity

Many elements of the social structure and properties of the group

¹⁰¹ Festinger, Schachter and Back, op. cit., p. 110.

¹⁰² C. J. French, "Correlates of Success in Retail Selling," American Journal of Sociology, 16: 133, 1960.

¹⁰³ Festinger, Schachter and Back, op. cit., pp. 176, 113.

¹⁰⁴ Schachter, loc. cit.

¹⁰⁵ Peter Blau, The Dynamics of Bureaucracy, pp. 99-248.

¹⁰⁶ Schachter, loc. cit.

¹⁰⁷ Festinger, Schachter and Back., op. cit., p. 90.

have been found to be related to productivity. The norms and cohesiveness of the group, and the membership status and status congruency of the individuals have been established as major determinants. Investigators of work groups have consistently reported the existence of a group norm as to a "fair day's work." Under most circumstances this norm has been zealously observed since noncompliance generally resulted in isolation and exclusion from membership.¹⁰⁸ Seashore found that the strength of these norms was dependent on the cohesiveness of the group.¹⁰⁹ He found that highly cohesive groups tended to develop strong productivity norms and the variation of production within the groups was narrow when compared with the less cohesive groups. The absolute level of production for the groups was found to be independent of the cohesiveness of the group and appeared to be dependent upon whether or not the group was favorably or unfavorably disposed toward management. Katz and Kahn reported that close supervision by supervisors induced the development of a high level of cohesiveness and norms opposed to high output.¹¹⁰ Zaleznik, Christensen, and Roethlisberger found that the production of an individual was related to group membership and was not related to the rewards an

108

The existence of this norm was first demonstrated by the Mayo Group in the classical "Bank Wiring Observation Room" experiment at Western Electric - - as cited in Committee on Work in Industry, National Research Council, Fatigue of Workers: Its Relation to Industrial Production, pp. 77-86.

109

Stanley E. Seashore, Group Cohesiveness in the Industrial Work Group.

110

R.L. Kahn and D. Katz, "Leadership Practices in Relation to Productivity and Morale," in D. Cartwright and A. Zander (eds.), Group Dynamics: Research and Theory, (2nd. ed.), pp. 554-570.

individual received from management.¹¹¹ Regular group members tended to conform to the group norms of productivity while those deviates and isolates who identified with the group, tended to be low producers. Conversely, deviates and isolates who identified negatively with the group, tended to produce above the norms. They also found that the higher the total status and the higher the status congruence the more likely was the individual to be a regular group member and an "on-the-line" producer. They concluded that:

. . . group membership and identification become the independent variables for predicting productivity and satisfaction
 . . . Once membership position and group identification are known, the prospects for predicting productivity and satisfaction become enhanced.¹¹²

The ability of a group to satisfy the needs of individuals has been found to be related to the cohesiveness and status structure of the group, and the membership status of the individuals. Seashore reported that members of highly cohesive groups felt less tension than did members of less cohesive groups, and were more likely to report that their jobs ranked "better than most" in the plant.¹¹³ Zaleznik, et al. noted that:

Work groups more well established in status ranks and with higher internal group development will tend to provide greater satisfaction for members than work groups less well established in status rank and with lower internal group development.¹¹⁴

¹¹¹ Zaleznik, Christensen, and Roethlisberger, op. cit., pp. 341-346.

¹¹² Ibid., pp. 382-383.

¹¹³ Seashore, op. cit., p. 61.

¹¹⁴ Zaleznik, Christensen, and Roethlisberger, op. cit., p. 283.

They also described the relationship between membership and satisfaction:

. . . a majority of the regular group members expressed positive feelings toward their job and their associations at work. A majority of the deviates and isolates expressed negative feelings about the job and their associations. Furthermore, a higher proportion of isolates were negative in these areas than deviates.¹¹⁵

They concluded from this that "satisfaction with the job and satisfaction with associations seemed to be directly related to each other."¹¹⁶

Newcomb, Turner, and Converse have noted that when the size of the work group becomes very large it is unable to effectively supply the rewards for all individuals, therefore, personal satisfaction tends to be related to subgroup membership.¹¹⁷ In the Prediction Study it was ascertained that the "in-group" value of the group was indirectly, through its effects on the other aforementioned elements, and directly the major determinant of satisfaction.¹¹⁸

A study showing that the effectiveness rating of the principal and the school by teachers was as much a product of the individual doing the assessment as the actual effectiveness has been reported by Bezeau. In an analysis of the sources of variance in teacher estimates of principal effectiveness, he found:

Nearly all of the variance occurred within the schools, indicating that the different teachers in a school have a

¹¹⁵ Ibid., p. 275. ¹¹⁶ Ibid., p. 286.

¹¹⁷ Newcomb, Turner, and Converse, op. cit., p. 367.

¹¹⁸ Zaleznik, Christensen, and Roethlisberger, op. cit., pp. 209-212.

very different idea of how effective their principal is. The rating of principal effectiveness is much more a function of the person who is doing the rating than of the principal who is being rated.¹¹⁹

The same conclusion was reached with respect to the analysis of the sources of variance in the estimates of school effectiveness.

Some support for the proposition of a positive relationship between value congruence and satisfaction with supervisory personnel has been presented by Lupini. In a study of values and social behavior in schools, he found the following relationship:

When the values of the principal were similar to those of his staff, the principal was less likely to be described as being impersonal or exercising close supervision than when dissimilarity in values existed. This suggests that when two individuals or groups share similar values, each is likely to perceive the patterns of behavior of the other as desirable, notwithstanding the general acceptability of this type of behavior.¹²⁰

Summary

The body of literature on professionalism, the social behavior of individuals, and the social structure of groups is extensive but there is a complete absence of literature relating these three variables. Most of the research has dealt with only one or two of the relationships presented in the theoretical background. When the findings of these studies are

119

Lawrence Manning Bezeau, "The Instrumental-Expressive Dichotomy in School Staffs," unpublished M.Ed. thesis, University of Alberta, Edmonton, 1966. p. 109.

120

Dante Lupini, "Values and Social Behavior in Schools", The Canadian Administrator, 5: 7, 1965.

drawn together there appears to be some substantiation for each of the elements and relationships utilized in the development of the hypotheses for this study.

CHAPTER IV

METHODS OF INVESTIGATION

In this chapter various aspects of the procedures utilized in obtaining and examining the data for the study are outlined. These include the selection of the sample, administrative procedures, instrumentation, and statistical procedures.

I. SELECTION OF THE SAMPLE

A complete list of the elementary and junior high schools operated by the Edmonton Public School District was obtained from the Edmonton Public School Board Offices. The writer selected those schools with (1) a teacher population of between fifteen and forty-three, (2) similar organization of the educational program and modes of teacher utilization, and (3) much the same arrangement of physical facilities. Principals of the selected schools were mailed a form letter in which the general nature and the administrative procedures of the study were outlined and which requested an indication as to whether or not the principal and his staff were willing to co-operate in the collection of the necessary data. Sixty-two schools were contacted in this manner. Forty-eight schools responded to this initial contact. A follow-up letter was mailed to the remaining fourteen schools eight of which subsequently replied. As a result of these contacts thirty-eight schools expressed their willingness to participate.

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No further effort was made to have the other schools participate as most indicated their reason for non-participation rested not on the nature of the study but on their heavy involvement in other activities.

II. ADMINISTRATIVE PROCEDURES

In preparation for the administration of the instruments, the writer secured a list of full-time professional personnel from each of the co-operating schools and prepared an alphabetized-numbered list for each school. In an effort to compensate for any alphabetic selection effect a second list with the names and numbers in reverse order was also prepared. At school staff meetings, the questionnaires, staff lists, and self-addressed return envelopes were distributed by the writer, and a brief overview of the purpose and nature of the study plus an explanation of the mechanics of answering the questionnaires were given. The odd and even numbered individuals were given the normal and reverse order staff lists, respectively. The teachers were asked to independently complete the questionnaires during the same day as the distribution. Individuals not present at the meeting were approached and requested to complete the questionnaires. Personal requests were also made to those persons who did not return the forms in order to ask them to do so. Every reasonable effort was made to get completed questionnaires from all the professional personnel.

To obtain a measure of the test-retest reliability of the instruments used in this study the instruments were readministered to the

principal and teachers of school number twenty-seven one month after the original administration. Care was taken to ensure that each staff member received the same staff list as on the original administration and only the responses of those completing the original questionnaires were utilized.

III. INSTRUMENTATION

In order to secure the data necessary to test the hypotheses of the study, the following five instruments were used:

- (1) Teacher Background Information Questionnaire
- (2) Teacher Opinion Questionnaire
- (3) School Social Organization Questionnaire
- (4) Principal Evaluation Questionnaire
- (5) Teacher Satisfaction Questionnaire

Teacher Background Information Questionnaire (see Appendix A)

The purpose of this questionnaire was to provide the researcher with some demographic information about the teachers and teacher groups.

Teacher Opinion Questionnaire (see Appendix B)¹

The Teacher Opinion Questionnaire, constructed by Hrynyk, pro-

¹Hereafter referred to as The Professional Role Orientation Scale

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III. DISCUSSION

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vided total professionalism and sub-scale professionalism scores based on the five dimensions of professionalism.² This instrument was essentially an extension of a Likert type rating scale constructed by Corwin et al.³ The extension was based on the same conception of professionalism as enunciated in this study.

The Corwin Scale.⁴ The Corwin scale was developed to measure professional role orientation. The scale consists of sixteen Likert type items grouped into four sub-scales: client orientation, colleague orientation, orientation to competence based on knowledge and orientation to decision making. The scale has been designed to yield a total score plus scores for each of the sub-tests.

The scale would appear to have 'construct validity'. Corwin and his associates selected items from the literature on the basis of their face validity. The authors screened out duplicate and ambiguous items and submitted the remainder to a panel of sociologists who grouped the items into five sub-categories based on the aforementioned orientations. The test constructors reduced the five categories into the four sub-scales and developed a thirty-three item questionnaire

²Nicholas P. Hrynyk, "Correlates of Professional Role Orientation in Teaching," pp. 88-97.

³Ronald G. Corwin, "The Development of an Instrument for Examining Staff Conflicts in the Public Schools," Mimeographed, Ohio State University, 1963.

⁴Ibid.

with the responses "strongly agree," "agree," "undecided," "disagree," "strongly disagree," and assigned direction weightings with values from one to five. An index of discrimination was achieved for each item by determining its ability to discriminate between the top and bottom quarter of a selected sample. Those items that did not discriminate significantly at the .01 level between the high and low groups on both the total scale and the sub-scale were discarded. The product of this procedure was the sixteen item scale.

There is little evidence of the 'congruent validity' of the Corwin Scale. Corwin found that it had a low correlation ($r=+.07$) with the employee orientation scale.⁵ He found a significant difference of means of total score between two samples of persons deemed "high" and "low" professionals according to several measures of professional activity - - for example, those who devoted more than five hours per week to reading, and those who had served as officers or on committees of a professional association. Corwin has given as supportive evidence the results of tests conducted on highly professional teachers at the Ohio State University laboratory school. He noted that this select group scored on the average seven points higher than the high professional validating group. Robinson, with a revision of the scale to fit the Canadian situation, found that the scale yielded differ-

⁵Ibid.

ences in mean scores of teachers with a Bachelor of Education degree and of those with no degree that were significant at the .001 level.⁶

The only evidence on the reliability of the scale has been supplied by Corwin. He found that the split-half test of reliability of the total scale, when corrected by the Spearman-Brown prophecy formula, yielded a correlation of .65. The authors noted that the sub-scales had so few items that they could be best used as only crude indicators.

Hrynyk - - The Professional Role Orientation Scale (PROS).⁷

Hrynyk made the following changes and extensions to the Corwin Scale:

1. the addition of two sub-scales to measure teachers' orientation to professional service and teachers' orientation to the professional association (The Alberta Teachers' Association),
2. the merger of the two sub-scales on client orientation and decision making and authority,
3. the rewording of the scale in order to make it applicable to the Alberta scene, and
4. the extension of all sub-scales from four to six items.

The six items included in the core-organizational sub-scale were adopted from an instrument developed by Ingram.⁸ It was found

⁶Norman Robinson, Report of Pilot Study, unpublished paper, Edmonton; University of Alberta, 1965.

⁷Hrynyk, op. cit., pp. 82-84.

⁸Ernest J. Ingram, "Member Involvement in the Alberta Teachers' Association," unpublished doctoral dissertation, Edmonton: University of Alberta, 1965.

to discriminate between a high commitment group and a low commitment group at the .01 level of significance and to have a reliability of $r=.82$. Hrynyk has contended that these "items exhibit face validity for the purpose of the present investigation."⁹

In order to extend the number of items in the sub-scales, Hrynyk selected items from Corwin's original list of items and scale, and from suggestions in the literature. Duplicating Corwin's procedure, Hrynyk administered these items to a sample of sixty-four teachers judged by their colleagues as being "high" or "low" on professionalism according to a definition based on the "ideal profession" model. The six items in each sub-scale demonstrating the largest differences between the mean scores of the high and low groups were selected for the final form of the Professional Role Orientation Scale. All differences were significant beyond the .05 level. Hrynyk found that when the item responses were combined into a questionnaire score, "every teacher in the high rated group scored higher than every teacher in the low rated group."¹⁰ and ". . . for all of the sub-scales and for the total scale the mean scores of the group rated high on professionalism were significantly higher than the mean scores of the group rated low on professionalism."¹¹

⁹Hrynyk, op. cit., p. 83.

¹⁰Nicholas P. Hrynyk, "Correlates of Professional Role Orientation in Teaching," unpublished doctoral dissertation, University of Alberta, Edmonton, 1966, p. 100.

¹¹Ibid.

Reliability of the scale and sub-scales was determined by employing the split-half method corrected for length by the Spearman-Brown prophecy formula on both the pilot and main study data. These reliability coefficients have been presented in Table I.¹² The table indicates that except for the estimated reliability coefficients of .81 and .78 for the core-organization and student-autonomy sub-scales respectively, none of the reliability coefficients for the sub-scales for the general sample was very high, although all were found to be significant beyond the .01 level. The coefficients for the total PROS scale indicate that the test was a reliable instrument. In the present study, with a sample of 529 respondents, a 'Coefficient of Equivalence'¹³ of .79 and a 'Coefficient of Stability'¹⁴ of .82 were obtained. The writer has accepted the PROS and its sub-scales as being sufficiently reliable for this investigation.

The extent to which the sub-scales of the PROS are discrete and measure different dimensions of professional role orientation is indicated by the Pearson product-moment correlation coefficients among the scale scores presented in Table II.¹⁵ These intercorrelations have been interpreted as showing that "each sub-scale makes a significant, but unique, contribution to total professional role orientation score."¹⁶ Table III contains the Pearson product-moment correlation

¹²Ibid., p. 103.

¹³L. J. Cronbach, Essentials of Psychological Testing, p. 66.

¹⁴Ibid., p. 69. ¹⁵Ibid., p. 105. ¹⁶Ibid., p. 106.

TABLE I

SPLIT-HALF CORRELATION AND ESTIMATED WHOLE TEST RELIABILITY FOR
 PILOT AND TOTAL SAMPLES FOR THE FINAL FORM OF THE
 PROFESSIONAL ROLE ORIENTATION SCALE

(N=40) and (N=1162)

Scale	Split-half Correlations*		Estimated Whole- test Reliability ^a	
	N=40	N=1162	N=40	N=1162
Knowledge	.59	.28	.74	.44
Service	.54	.48	.70	.65
Core-Organ.	.66	.69	.79	.81
Col. - Prof.	.75	.28	.80	.45
Stud. Aut.	.81	.40	.90	.78
Total PROS	.89	.64	.94	.78

*All correlations significant beyond .01 level.

^aEstimated using Spearman-Brown prophecy formula.

TABLE 2

MEAN-ADJUSTED CORRELATION COEFFICIENTS FOR THE MEAN-ADJUSTED CORRELATION COEFFICIENTS

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(continued from Table 1)

Variable	Mean-Adjusted Correlation Coefficient	Mean-Adjusted Correlation Coefficient		Variable
		Mean	Standard Deviation	
1.00	0.00	0.00	0.00	1.00
0.85	0.00	0.00	0.00	0.85
0.70	0.00	0.00	0.00	0.70
0.55	0.00	0.00	0.00	0.55
0.40	0.00	0.00	0.00	0.40
0.25	0.00	0.00	0.00	0.25

NOTE: The mean-adjusted correlation coefficient is calculated as follows:

Mean-Adjusted Correlation Coefficient = $\frac{\text{Mean} + \text{Standard Deviation}}{2}$

TABLE II
CORRELATION MATRIX FOR SUB-SCALE AND TOTAL SCORES ON
THE PROFESSIONAL ROLE ORIENTATION SCALE
(N=829, Random Sample)

	Knowledge	Service	Core- Org.	Col.- Prof.	Stud.- Aut.	Total
Knowledge		.17*	.29*	.27*	.10	.59**
Service			.17*	.16*	.10	.58**
Core-Org.				.34*	.07	.71**
Col. - Prof.					.17*	.63**
Stud. - Aut.						.42**

*Significant beyond the .05 level.

**Significant beyond the .01 level.

TABLE I

Summary of the results of the analysis of variance for the different factors

and the corresponding mean squares and degrees of freedom

(The values are given in parentheses)

Factor	Sum of Squares	D.F.	Mean Square	F-value	Probability
1. Sex	1.14	1	1.14	1.14	0.29
2. Age	0.05	1	0.05	0.05	0.83
3. Height	0.05	1	0.05	0.05	0.83
4. Weight	0.05	1	0.05	0.05	0.83
5. Sex x Age	0.05	1	0.05	0.05	0.83
6. Sex x Height	0.05	1	0.05	0.05	0.83
7. Sex x Weight	0.05	1	0.05	0.05	0.83
8. Age x Height	0.05	1	0.05	0.05	0.83
9. Age x Weight	0.05	1	0.05	0.05	0.83
10. Height x Weight	0.05	1	0.05	0.05	0.83
11. Sex x Age x Height	0.05	1	0.05	0.05	0.83
12. Sex x Age x Weight	0.05	1	0.05	0.05	0.83
13. Sex x Height x Weight	0.05	1	0.05	0.05	0.83
14. Age x Height x Weight	0.05	1	0.05	0.05	0.83
15. Sex x Age x Height x Weight	0.05	1	0.05	0.05	0.83

Total for all factors = 1.14

Total D.F. = 10 (11 - 1)

TABLE III

CORRELATION MATRIX FOR SUB-SCALE AND TOTAL SCORES ON
THE PROFESSIONAL ROLE ORIENTATION SCALE

(N=529)

	Knowledge	Service	Core- Org.	Col- Prof.	Stud.- Aut.	Total
Knowledge		.21*	.27**	.25**	.09	.56**
Service			.28**	.27**	.15	.66**
Core-Org.				.27**	.09	.70**
Col. - Prof.					.25**	.63**
Stud. - Aut.						.47**

*Significant at the .05 level, one-tailed test.

**Significant at the .01 level, one-tailed test.

TABLE I

Properties of the polymers prepared by the various methods

and the corresponding molecular weights

(continued)

Sample	Yield, %	Viscosity, dl/g	Inherent viscosity, dl/g	Molecular weight, $\times 10^{-4}$	Notes
1001	90	0.5	0.7	1.2	Prepared by method A
1002	85	0.4	0.6	1.1	Prepared by method A
1003	80	0.3	0.5	1.0	Prepared by method A
1004	75	0.2	0.4	0.9	Prepared by method A
1005	70	0.1	0.3	0.8	Prepared by method A

Notes: 1. The polymers were prepared by the various methods described in the text.

2. The molecular weights were determined by the method of Mark and Overman.

coefficients among the scale scores obtained from the responses on the Professional Role Orientation Scale of the teachers co-operating in this study. The similarity between the two matrices is evident.

The factorial validity of the scale and its items was determined by subjecting the responses on the items to a Principal-axis factor analysis with a Varimax rotation.¹⁷ The Kaiser criterion for determining the number of significant common factors was used.¹⁸ Ten eigenvalues greater than one were found. Table IV shows the factor loadings and communalities obtained from a Principal-Component factor analysis with a Varimax rotation in a ten factor field of the responses on the items of the Professional Role Orientation Scale. The table also gives the proportion of the total variance accounted for by each common factor in the rotated solution. The communalities show that from 42 per cent to 79 per cent of the item variances and 56 per cent of the total variance were accounted for by the ten common factors. The proportion of the total variance attributed to each of the factors ranged from .04 to .10.

Inspection of the items having their primary factor loadings on the factors under consideration led to the following description of the factors:

¹⁷H. H. Marman, Modern Factor Analysis, pp. 154-171, 301-305.

¹⁸H. F. Kaiser, "The Application of Electronic-Computers to Factor Analysis," Educational and Psychological Measurement, XX, 1 (1960), 141-151.

TABLE IV

PRINCIPAL-AXIS WITH A VARIMAX ROTATION FACTOR SOLUTION

FOR THE PROFESSIONAL ROLE ORIENTATION SCALE

Item	Factor Loadings of Items on Factors										Communalities
	1	2	3	4	5	6	7	8	9	10	
5	0.026	0.053	0.084	0.186	0.063	0.694*	-0.203	0.048	-0.115	-0.025	0.588
6	0.026	0.034	-0.245	0.067	0.037	0.579*	0.235	-0.129	0.054	0.187	0.513
7	-0.007	-0.009	0.083	-0.018	-0.016	-0.010	0.008	0.787*	-0.034	0.071	0.634
8	0.081	0.051	0.006	0.110	0.146	-0.031	0.191	0.640*	-0.031	-0.095	0.500
9	0.019	-0.007	-0.211	0.591*	0.013	0.271	0.160	-0.068	0.107	0.225	0.560
10	0.206	0.243	0.003	0.641*	0.024	0.014	-0.039	0.056	-0.034	-0.006	0.519
11	-0.218	0.291	0.277	0.229	-0.125	-0.002	0.294*	-0.201	-0.009	0.150	0.426
12	0.162	0.831*	0.083	0.065	0.097	0.058	0.067	0.018	-0.070	-0.044	0.752
13	0.089	0.864*	0.091	0.021	0.024	-0.012	0.037	-0.088	0.048	-0.067	0.779
14	0.151	0.624*	-0.041	0.194	-0.073	0.034	0.067	0.164	0.172	0.121	0.534
15	0.258	0.206	0.062	0.187	-0.208	0.033	-0.065	-0.108	0.557*	-0.163	0.544
16	-0.076	-0.019	0.071	0.039	0.214	-0.034	0.004	-0.029	0.791*	0.109	0.699
17	0.666*	0.186	-0.065	0.169	-0.055	0.069	0.051	0.083	0.140	-0.044	0.550
18	0.573*	0.049	-0.068	0.305	-0.106	-0.173	-0.064	0.045	-0.150	-0.012	0.499
19	0.735*	0.060	0.129	0.203	-0.016	-0.112	-0.020	-0.036	-0.068	0.004	0.620
20	0.428*	0.140	-0.154	-0.198	-0.13	0.176	0.200	0.120	0.280	0.193	0.467
21	0.716*	0.093	-0.039	0.015	0.151	0.087	-0.034	0.057	0.110	0.133	0.587
22	0.723*	0.026	0.215	-0.078	0.064	0.171	0.003	-0.042	0.001	-0.020	0.611
23	0.215	0.136	0.507*	-0.163	0.058	0.203	0.039	0.021	0.106	-0.127	0.422
24	0.072	-0.016	0.187	0.058	-0.435	0.193	0.113	0.247	0.063	0.466*	0.565
25	0.162	0.073	0.323	0.537*	0.100	-0.034	0.067	0.079	0.140	-0.189	0.501
26	-0.045	-0.023	0.612*	0.078	0.075	-0.119	0.179	0.034	0.019	0.224	0.486
27	0.231	0.019	0.345	0.435*	-0.158	0.098	0.002	0.206	0.299	-0.120	0.543
28	0.099	-0.004	0.117	-0.051	0.187	-0.030	-0.171	-0.072	0.021	0.726*	0.625
29	-0.015	0.136	0.083	0.033	-0.013	-0.003	0.735*	-0.056	0.053	-0.068	0.578
30	-0.014	-0.000	0.246	0.075	0.208	0.024	0.634*	-0.142	-0.104	-0.052	0.545
31	0.105	-0.021	0.265	-0.183	0.090	0.501*	0.093	0.015	0.163	-0.346	0.530
32	0.067	-0.003	0.133	0.025	0.649*	0.223	0.119	0.170	0.141	0.044	0.559
33	0.014	0.035	0.083	0.021	0.722*	0.002	0.066	0.025	-0.010	0.078	0.542
34	-0.005	0.059	0.665*	0.054	0.066	0.004	0.062	0.042	0.004	0.046	0.461
V_p^a	0.10	0.07	0.06	0.06	0.05	0.05	0.05	0.04	0.04	0.04	0.56

*Indicates the primary factor loading for that item.

^aThe proportion of total variance accounted for by each factor.

1. Orientation to Core-Organization: belief in the importance of and role played by the Teachers' Association; identification with and loyalty to the association.
2. Commitment to Teaching: the desire to serve society as a teacher no matter what more lucrative occupations are available and the willingness to make it a lifetime vocation.
3. Orientation to Professional-Colleague Standards: the desire to meet the educational standards as enunciated by professional colleagues and the need for these standards to be of concern to all teachers.
4. Commitment to Knowledge: the belief that a teacher's practice should be based primarily on his acquaintance with subject-matter and the educational literature.
5. Demand for Autonomy in Educational Decision-Making: concern with the teacher's right to make major educational decisions.
6. Demand for Professional Competence: an expression of competence based upon knowledge of subject-matter and ability to communicate.
7. Concern for Student Welfare: a belief that teachers should only do what is best for the students and resist any force that appears to jeopardize their interests.

4. Explain the following: (10 marks)
 - (a) The concept of a 'good' and a 'bad'.
 - (b) The concept of a 'right' and a 'wrong'.
 - (c) The concept of a 'duty' and a 'responsibility'.
 - (d) The concept of a 'virtue' and a 'vice'.
5. Explain the following: (10 marks)
 - (a) The concept of a 'good' and a 'bad'.
 - (b) The concept of a 'right' and a 'wrong'.
 - (c) The concept of a 'duty' and a 'responsibility'.
 - (d) The concept of a 'virtue' and a 'vice'.
6. Explain the following: (10 marks)
 - (a) The concept of a 'good' and a 'bad'.
 - (b) The concept of a 'right' and a 'wrong'.
 - (c) The concept of a 'duty' and a 'responsibility'.
 - (d) The concept of a 'virtue' and a 'vice'.
7. Explain the following: (10 marks)
 - (a) The concept of a 'good' and a 'bad'.
 - (b) The concept of a 'right' and a 'wrong'.
 - (c) The concept of a 'duty' and a 'responsibility'.
 - (d) The concept of a 'virtue' and a 'vice'.
8. Explain the following: (10 marks)
 - (a) The concept of a 'good' and a 'bad'.
 - (b) The concept of a 'right' and a 'wrong'.
 - (c) The concept of a 'duty' and a 'responsibility'.
 - (d) The concept of a 'virtue' and a 'vice'.
9. Explain the following: (10 marks)
 - (a) The concept of a 'good' and a 'bad'.
 - (b) The concept of a 'right' and a 'wrong'.
 - (c) The concept of a 'duty' and a 'responsibility'.
 - (d) The concept of a 'virtue' and a 'vice'.
10. Explain the following: (10 marks)
 - (a) The concept of a 'good' and a 'bad'.
 - (b) The concept of a 'right' and a 'wrong'.
 - (c) The concept of a 'duty' and a 'responsibility'.
 - (d) The concept of a 'virtue' and a 'vice'.

8. Need for Training Requirements: the need for higher minimum training requirements before persons should be allowed to teach.
9. Desire to Serve Students and Society: the desire to promote some ideal of service.
10. Orientation to Colleague Opinion: the belief in the greater moment of professional colleague opinion over the opinions of other persons.

The factorial validity of the sub-scales and their items was ascertained by comparing the factors measured by the items of the sub-scales with Hrynyk's descriptions of the sub-scales. The primary factor loadings of the items of the Knowledge and Skill sub-scale on the Demand for Professional Competence, Need for Training Requirements and Commitment to Knowledge factors compared favourable with Hrynyk's description of this sub-scale as the professional's "belief about the practice of the occupation being based on skills acquired after study of an esoteric body of theoretical knowledge,"¹⁹ this "body of knowledge and skills are acquired through a long period of formal schooling,"²⁰ and "the technical competence of practitioners has been formally tested and they are licensed."²¹ The primary loadings of item 11 on Concern for Student

¹⁹Hrynyk, op. cit., p. 21.

²⁰Ibid., p. 22A.

²¹Ibid.

Welfare and a secondary loading on Commitment to Teaching, of items 12, 13 and 14 on Commitment to Teaching and of items 15 and 16 on Desire to Serve Students and Society yielded a description that directly corresponded to Hrynyk's description of the Service Ideal sub-scale as a measure of the professional's "beliefs regarding the unique, indispensable, impartial, essential and altruistic nature of the vocation,"²² commitment to the occupation for life and the provision of his services "whenever the need arises and whatever the circumstances."²³ All the items of the Core-Organizational sub-scale had their primary factor loadings on Orientation to Core-Organization factor. The description of this factor and Hrynyk's sub-scale, similarly named, were interchangeable.²⁴ Items 22 to 28 of the Colleague-Profession sub-scale had their primary loadings on Orientation to Professional-Colleague Standards, Commitment to Knowledge with secondary loadings on Orientation to Professional Colleague Standards, and Orientation to Colleague Opinion. On the basis of the factor analysis the items of the sub-scale could be described as measuring the professional's valuing of colleague opinion and his orientation to standards of teaching enunciated by his professional colleagues due to both his colleague

²²Hrynyk, loc. cit.

²³Ibid., p. 12.

²⁴Ibid.

orientation and his belief that these colleagues were more knowledgeable about educational matters. This description does not do violence to Hrynyk's belief that the Colleague-Profession sub-scale measured, "the professional's beliefs about the occupational unity of the participants and the need for co-operative, equalitarian and supportive behavior."²⁵ An inspection of the primary factor loadings of the items included in the client-autonomy sub-scale showed them to be spread over four factors. The primary loadings on the Concern for Student Welfare and Autonomy in Educational Decision-Making factors by items 29 and 30, and 32 and 33, respectively, were unique to these items in this sub-scale but items 31 and 34 could have been readily subsumed under other sub-scales. The dimension measured by this sub-scale may be described as the professional's belief that on the basis of his professional competence, the standards of the profession and his vital concern for the welfare of the client he should be granted autonomy in the area of educational decision-making. This statement parallels the description provided for the sub-scale as a measure of "the professional's belief that his ultimate responsibility is for the welfare of the clients he serves, and the belief that the practitioner must have autonomy in the areas associated with this service."²⁶ Table V shows that when the

²⁵Ibid.

²⁶Ibid.

TABLE V

PRINCIPAL-AXIS WITH A VARIMAX ROTATION FACTOR SOLUTION FOR
THE PROFESSIONAL ROLE ORIENTATION SCALE
(FIVE FACTOR FIELD)

Item	1	2	3	4	5	Communalities
5	0.071	0.031	0.110	0.023	0.422*	0.197
6	0.084	-0.020	0.149	-0.397	0.513	0.450
7	0.057	-0.127	-0.022	0.469*	0.019	0.240
8	0.151	-0.038	-0.074	0.424*	-0.005	0.209
9	0.027	0.158	-0.093	-0.059	0.642*	0.450
10	0.191	0.434*	-0.141	0.231	0.292	0.383
11	-0.275	0.392*	-0.109	0.180	0.068	0.279
12	0.198	0.744*	0.180	-0.087	-0.103	0.644
13	0.115	0.800*	0.148	-0.137	-0.134	0.711
14	0.194	0.601*	-0.018	0.017	0.170	0.428
15	0.247	0.364*	-0.026	0.052	0.253	0.261
16	-0.067	0.025	0.253	0.064	0.368*	0.209
17	0.678*	0.236	-0.016	0.054	0.145	0.539
18	0.541*	0.167	-0.256	0.182	-0.027	0.421
19	0.678*	0.173	-0.020	0.219	-0.044	0.539
20	0.480*	0.016	0.140	-0.170	0.196	0.317
21	0.727*	0.044	0.090	0.049	0.116	0.554
22	0.693*	0.026	0.236	0.104	-0.013	0.547
23	0.180	0.137	0.451*	0.215	-0.066	0.305
24	0.043	0.022	-0.100	0.256	0.333*	0.189
25	0.110	0.324	0.163	0.414*	0.203	0.356
26	-0.149	0.089	0.379	0.437*	-0.021	0.366
27	0.190	0.257	0.067	0.480*	0.327	0.445
28	0.058	-0.105	0.034	0.128	0.171*	0.061
29	-0.035	0.217	0.410*	-0.193	0.035	0.255
30	-0.066	0.094	0.540*	-0.082	-0.011	0.312
31	0.132	-0.048	0.469*	-0.035	0.117	0.255
32	0.111	-0.111	0.557*	0.088	0.202	0.383
33	0.035	-0.078	0.471*	0.029	0.006	0.230
34	-0.094	0.160	0.430	0.449*	-0.056	0.402
V ^a _p	.10	.08	.07	.06	.05	.36

*Indicates the primary factor loading for that item.

^aThe proportion of total variance accounted for by each factor.

MEAN ANNUAL RAINFALL (INCHES) AND MEAN ANNUAL TEMPERATURE (°F) FOR THE PERIOD 1951-1980

Source: National Oceanic and Atmospheric Administration

(Data from 1951-1980)

State	1	2	3	4	5	6
Alabama	58.5	68.5	71.5	74.5	77.5	80.5
Alaska	15.5	25.5	35.5	45.5	55.5	65.5
Arizona	13.5	23.5	33.5	43.5	53.5	63.5
Arkansas	53.5	63.5	66.5	69.5	72.5	75.5
California	15.5	25.5	35.5	45.5	55.5	65.5
Colorado	13.5	23.5	33.5	43.5	53.5	63.5
Connecticut	48.5	58.5	61.5	64.5	67.5	70.5
Delaware	48.5	58.5	61.5	64.5	67.5	70.5
Florida	53.5	63.5	66.5	69.5	72.5	75.5
Georgia	53.5	63.5	66.5	69.5	72.5	75.5
Hawaii	15.5	25.5	35.5	45.5	55.5	65.5
Idaho	13.5	23.5	33.5	43.5	53.5	63.5
Illinois	48.5	58.5	61.5	64.5	67.5	70.5
Indiana	48.5	58.5	61.5	64.5	67.5	70.5
Iowa	48.5	58.5	61.5	64.5	67.5	70.5
Kansas	48.5	58.5	61.5	64.5	67.5	70.5
Kentucky	48.5	58.5	61.5	64.5	67.5	70.5
Louisiana	53.5	63.5	66.5	69.5	72.5	75.5
Maine	48.5	58.5	61.5	64.5	67.5	70.5
Maryland	48.5	58.5	61.5	64.5	67.5	70.5
Massachusetts	48.5	58.5	61.5	64.5	67.5	70.5
Michigan	48.5	58.5	61.5	64.5	67.5	70.5
Minnesota	48.5	58.5	61.5	64.5	67.5	70.5
Mississippi	53.5	63.5	66.5	69.5	72.5	75.5
Missouri	48.5	58.5	61.5	64.5	67.5	70.5
Montana	13.5	23.5	33.5	43.5	53.5	63.5
Nebraska	48.5	58.5	61.5	64.5	67.5	70.5
Nevada	13.5	23.5	33.5	43.5	53.5	63.5
New Hampshire	48.5	58.5	61.5	64.5	67.5	70.5
New Jersey	48.5	58.5	61.5	64.5	67.5	70.5
New Mexico	13.5	23.5	33.5	43.5	53.5	63.5
New York	48.5	58.5	61.5	64.5	67.5	70.5
North Carolina	53.5	63.5	66.5	69.5	72.5	75.5
North Dakota	13.5	23.5	33.5	43.5	53.5	63.5
Ohio	48.5	58.5	61.5	64.5	67.5	70.5
Oklahoma	48.5	58.5	61.5	64.5	67.5	70.5
Oregon	13.5	23.5	33.5	43.5	53.5	63.5
Pennsylvania	48.5	58.5	61.5	64.5	67.5	70.5
Rhode Island	48.5	58.5	61.5	64.5	67.5	70.5
South Carolina	53.5	63.5	66.5	69.5	72.5	75.5
South Dakota	13.5	23.5	33.5	43.5	53.5	63.5
Tennessee	53.5	63.5	66.5	69.5	72.5	75.5
Texas	53.5	63.5	66.5	69.5	72.5	75.5
Utah	13.5	23.5	33.5	43.5	53.5	63.5
Vermont	48.5	58.5	61.5	64.5	67.5	70.5
Virginia	53.5	63.5	66.5	69.5	72.5	75.5
Washington	13.5	23.5	33.5	43.5	53.5	63.5
West Virginia	48.5	58.5	61.5	64.5	67.5	70.5
Wisconsin	48.5	58.5	61.5	64.5	67.5	70.5
Wyoming	13.5	23.5	33.5	43.5	53.5	63.5

*Data for Alaska and Hawaii are for the period 1951-1980.

*Data for Alaska and Hawaii are for the period 1951-1980.

factor field is reduced to a number corresponding to the number of sub-scales the items associated with the Client-Autonomy Sub-scale converge under one factor.

In summary, the factor analysis of the scores on the items of the Professional Role Orientation Scale has given factorial validation to the placement of items in the five sub-scales and to the description of these sub-scales as enunciated by Hrynyk. The evidence would suggest that since the scale has ten significant common factors, ten sub-scales would be appropriate but since only two or three items were found to have their primary loadings on one common factor this would appear to be impractical. This deficiency of items forces the combination of questions having similarly defined characteristics or factors so that a meaningful scale could result. It appears that Hrynyk has successfully achieved this meaningful grouping of items into sub-scales.

The Professional Role Orientation Scale appears to have both face and factorial validity. The scale is internally consistent and yields scores stable over a period of time. For the purposes of this study, the writer has accepted the scale as being sufficiently valid and reliable.

School Social Organization Questionnaire (See Appendix C)

The writer has developed a questionnaire measuring the various social system variables necessary for the testing of the hypotheses. Some items were selected with no modification from the literature while

others were modified to suit the purposes of this particular study. The item measuring the strength of sentiment was developed for this study and lacks any reference in the literature.

Rate of Emergent Interaction. The rate of emergent interaction has been defined here as the number of times per week a teacher interacts socially with the other members of the teaching group. The item measuring this rate stated, "Indicate the number of times that you would be likely to socialize informally with each individual." This item paraphrases that used by Arensberg and Macgregor,²⁷ and suggested by Blau.²⁸ The response alternatives that were presented followed the suggestion of Gullahorn.²⁹ These alternatives were "rarely", about once a week, "several times a week," "once or twice a day," and "several times a day or more often". The weights assigned to the responses were 0, 1, 2, 5, and 10 respectively. These weights were made lower than those suggested in the responses themselves in order to attempt to counteract the tendency for people to over-estimate their social interactions. The person's rate of interaction was the total of these weighted responses.

²⁷C. M. Arensberg and D. Macgregor, "Determination of Morale in an Industrial Company," Applied Anthropology, 1: 12-34, 1942.

²⁸P. M. Blau, The Dynamics of Bureaucracy, pp. 123-126.

²⁹J. T. Gullahorn, "Distance and Friendship as Factors in the Gross Interaction Matrix," Sociometry, 15: 123-134, 1952.

With reference to the validity and reliability of this method Blau has stated, "This method is liable to all the distortions that can creep into a man's perception of his own behavior, but is not utterly unreliable . . . "30 Dean in a study of union members found that 29 per cent of the group of 257 falsified their frequency of attendance at union meetings.³¹ In comparing statements by pairs of workers as to whether or not they had ever lunched together, Blau found discrepancies in 39 per cent of the cases.³² Since Dean noted that the discrepancies were directional - - reporting a greater number than actual - - these discrepancies can bias the results. The writer feels that he can safely assume that these discrepancies were evenly distributed among the schools, therefore, the distortion of the data was in the absolute amounts but did not affect the relationships between schools: it did not cause a change in the ranking of schools according to their rate of interaction. The reduced weightings was an attempt to reduce this bias of over-estimation. Some means for enhancing the validity of these statements of interaction have been suggested by Hovland et al. After an extensive study of communications, they found that if:

... . careful attention has been given to question wording,
test administrators are clearly designated as research
workers who are disassociated from persons having authority

³⁰P. M. Blau, loc. cit.

³¹Lois R. Dean, "Interaction, Reported and Observed: The Case of One Local Union," Human Organization, 17: 36-44, 1958.

³²Blau, op. cit., p. 125.

over the respondents, subjects are informed that differences of opinion are to be expected, and usual assurances are given that answers will remain anonymous. Under these conditions, it seems fairly safe to assume that the individual's overt verbal responses will correspond fairly well to his implicit verbal responses.³³

These suggestions were followed in the administration of the questionnaires.

In order to gain some evidence of the validity of the responses on the social interaction item a comparison was made between the rate of interaction reported by the individuals with other members of the staff and the rate attributed by other staff members to these individuals. For the total sample of 529 individuals the Pearson product-moment correlation of .583 indicated a relationship significant beyond the .001 level between the perceived and attributed rates of social interaction. Since not all staff members responded to the questionnaires the rates of attributed interaction were not complete. Acknowledging this effect of missing data the aforementioned validity coefficient can be interpreted as a conservative estimate of the true coefficient. When the procedure was repeated with the data from schools with over eighty per cent returns a coefficient of .581 was obtained: this was lower but not significantly different from the coefficient obtained from the total sample. This indicates that although this is a conservative estimate, the true coefficient does not lie much beyond this.

³³Carl I. Hovland, Irving L. Janis, and Harold H. Keeley, Communication and Persuasion, p. 9.

the first of these is the fact that the
 the second is the fact that the
 the third is the fact that the
 the fourth is the fact that the
 the fifth is the fact that the

the sixth is the fact that the

the seventh is the fact that the

the eighth is the fact that the

the ninth is the fact that the

the tenth is the fact that the

the eleventh is the fact that the

the twelfth is the fact that the

the thirteenth is the fact that the

the fourteenth is the fact that the

the fifteenth is the fact that the

the sixteenth is the fact that the

the seventeenth is the fact that the

the eighteenth is the fact that the

the nineteenth is the fact that the

the twentieth is the fact that the

the twenty-first is the fact that the

the twenty-second is the fact that the

the twenty-third is the fact that the

the twenty-fourth is the fact that the

the twenty-fifth is the fact that the

the twenty-sixth is the fact that the

the twenty-seventh is the fact that the

the twenty-eighth is the fact that the

An inspection of the variances of the scores on the two estimates of social interaction found that there was a significant difference beyond the .001 level between the variance of 757.35 for the perceived rate of interaction scores and the variance of 453.26 for the attributed rate of interaction scores. Utilizing the Cochran and Cox method³⁴ for determining the significance of the difference between means, the mean of 59.64 for the perceived rate of interaction scores was found to be significantly higher at the .001 level than the mean of 53.02 for the attributed rate of interaction scores. Since the assumption of homogeneity of variance underlying the Pearson product-moment correlation was not met further evidence supporting the conclusion that the obtained validity coefficient was a conservative estimate has been provided. The significant difference between means indicates that the effect of the missing data on the attributed rate of interaction was significant.

Since the Pearson product-moment correlations obtained above indicate that only thirty-four per cent of the variance on an estimate of the rate of social interaction could be predicted from the other estimate and that there was a significant difference between the means of the two estimates, the writer has chosen to include both in his

³⁴George A. Ferguson, Statistical Analysis in Psychology and Education (second edition), pp. 171-173.

analysis. The rate of social interaction as enunciated by the individual has been labelled the Perceived Rate of Social Interaction and the rate as indicated by his fellow teachers has been named the Attributed Rate of Social Interaction.

Both estimates of social interaction are subject to certain biases. Scott, in a review of field methods in the study of organizations, drew reference to studies conducted by Dean³⁵ and Blau,³⁶ which observed the phenomenon of over-estimation of social interaction when the perceived rate of interaction was recorded, and made the following comment:

Both studies were able to relate the discrepancies found to certain needs or values on the part of the respondents involved, indicating that information on interaction, also on activities, is not "neutral" material from the standpoint of the respondent but is closely related to his self-conception and hence subject to distortion.³⁷

A product of this flattery of the self-concept is for individuals to over-estimate their interaction with highly esteemed individuals and to under-estimate their interactions with the lowly esteemed.³⁸ This introduces a systematic error in the rates of attributed interaction.

³⁵Dean, loc. cit.

³⁶Blau, loc. cit.

³⁷W. R. Scott, "Field Methods in the Study of Organizations" in James G. March (ed.), Handbook of Organizations, p. 271.

³⁸L. Katz, "The Distribution of the Number of Isolates in a Social Group," Annual of Mathematics and Statistics, XXIII (1952), pp. 271-276.

These biases must be kept in mind when interpreting the results of the analysis involving the rates of social interaction.

Estimates of .77 and .74 for the coefficient of stability for the rate of interaction item was obtained from the test-retest data from school 27. Both correlations were significant at the .01 level. The difference between means of 54.37 and 55.92 of the perceived rate of interaction scores from the two administrations, respectively, was not significant at the .05 level. Similarly the difference between the variances of 942.49 and 806.56 was not significant. For the attributed rate of interaction scores, the difference between the means of 46.89 and 48.27, respectively, was not significant. The variances of 319.69 and 357.97 were not significantly different. These coefficients would indicate that this item was a stable measure of the perceived and attributed rates of interaction.

Strength of Sentiments of Friendship. The strength of friendship has been defined as the number of in-group choices made when the close friendship sphere has been limited. The scale has attempted to measure the strength of friendship by asking the subjects to "Indicate the members of the staff whom you would invite to a social affair at your home if the occasion was restricted to your ten closest friends from all walks of life. (Do not include spouses in your calculations.)" The number chosen has served as an index of the strength of friendship.

The validity of this measure rests upon its theoretical base and several observations taken from the research. It was previously noted that individuals maximize their profit within one situation and within their total life environment. Since the field has been restricted to only those ten individuals offering the highest amount of affect reward, and since the field was extended to include people from all walks of life, then it has been assumed that the item has measured the relative affect profit achieved among alternatives and, therefore, measured the strength (amount relative to other groups) of the affect relationships emerging from within the teacher group. In their study of friendship relations within the housing courts, Festinger, Schachter and Back noted that the stronger the friendships within a social community the fewer the outside friendship contacts and activities engaged in and the less the members felt a "need for friends outside of Westgate."³⁹ Zaleznik, Christensen and Roethlisberger noted that as friendships developed within the work group they extended into the social activities outside the plant and these social relationships were often obtained at a high cost of time away from family or other extra money-making jobs."⁴⁰ It is on the bases of these findings and this item of theory that the validity of this item rests.

³⁹L. Festinger, S. Schachter and K. Back, Social Pressures in Informal Groups, p. 29.

⁴⁰A. Zaleznik, C. R. Christensen, and R. J. Roethlisberger, The Motivation, Productivity, and Satisfaction of Workers: A Prediction Study, p. 138.

The product-moment test-retest reliability coefficient of .56 was significant at the .01 level. This coefficient is low in comparison with that obtained for the other items and may be directly attributable to the narrow spread of scores.

Technical and Social Esteem. The items measuring these two dimensions have been taken from Jennings study and only slightly reformulated.⁴¹ The item measuring technical esteem read "In answer to the question "Whom would I like to work with?", assign rank orders of preference (one being the highest rank) to the members of the staff." The item measuring social esteem was the same except for the insertion of the question "Whom would I like to spend my leisure time with?".

The items have face validity. Jennings has provided no evidence of empirical validity and reliability. In this study the esteem structures were obtained by ranking the medians of the ranks assigned to the individuals. The Spearman rank correlations of .78 and .74 obtained by comparing the technical and social esteem structures yielded by the two administrations of the items were significant at the .01 level. These correlations indicate that this procedure produced a reliable description of the esteem structures. No attempt was made to obtain data on the congruent validity of the procedure.

⁴¹H. H. Jennings, Leadership and Isolation, pp. 257-258.

The question of the existence of a "moral law" is a question of fact, not of logic. It is a question of fact because it is a question of whether or not there is a law that is binding on all men, and not a question of whether or not there is a law that is binding on some men.

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The measurement of the "group property" called cohesiveness was accomplished by using the Teacher Satisfaction Questionnaire.

Teacher Satisfaction Questionnaire (See Appendix D)

This instrument was developed by Andrews⁴² and modified by Von Fange.⁴³ The questionnaire consists of six items which purport to provide measures of the following variables:

- (a) Global Satisfaction - the degree of satisfaction with the present teaching position in all of its aspects.
- (b) Social Satisfaction - the degree of satisfaction with the social relationships existing among the teachers.
- (c) Policy Satisfaction - the degree of satisfaction with the educational policies of the school as compared to policies which the teacher feels to be most desirable educationally.
- (d) Occupational Satisfaction - the degree of satisfaction with the occupation or profession of teaching as compared to financially equivalent non-teaching occupations involving the use of the teacher's present academic training. The degree of satisfaction is inferred from the expressed degree of consideration a teacher would give a non-teaching job opportunity.
- (e) Alternative Employment Perception - the extent to which a teacher feels that non-teaching jobs are available for persons of his sex and training.
- (f) Conformity Pressure - the extent to which a teacher feels pressure to conform to the school's educational policies. The degree of pressure felt by the teacher is inferred from the extent to which he feels that the administration is receptive to criticism of the school's educational policies.⁴⁴

⁴²John H. M. Andrews, "Administrative Significance of Psychological Differences Between Secondary Teachers of Different Subject Matter Fields," unpublished doctoral dissertation, The University of Chicago, 1957, p. 58.

⁴³E. A. Von Fange, "Implications for School Administration of the Personality Structure of Educational Personnel," unpublished doctoral dissertation, University of Alberta, Edmonton, 1961, pp. 55, 196-197.

⁴⁴Andrews, loc. cit.

The treatment of the "group" hypothesis, which is discussed in the

appendix of this report, is given in the following table:

Appendix: Statistical Analysis of the Data

The treatment of the "group" hypothesis is discussed in the

appendix of this report, which is given in the following table:

The treatment of the "group" hypothesis is discussed in the

- (a) Fisher's test - The degree of significance of the results is given in the table.
- (b) Fisher's test - The degree of significance of the results is given in the table.
- (c) Fisher's test - The degree of significance of the results is given in the table.
- (d) Fisher's test - The degree of significance of the results is given in the table.
- (e) Fisher's test - The degree of significance of the results is given in the table.
- (f) Fisher's test - The degree of significance of the results is given in the table.
- (g) Fisher's test - The degree of significance of the results is given in the table.
- (h) Fisher's test - The degree of significance of the results is given in the table.
- (i) Fisher's test - The degree of significance of the results is given in the table.
- (j) Fisher's test - The degree of significance of the results is given in the table.
- (k) Fisher's test - The degree of significance of the results is given in the table.
- (l) Fisher's test - The degree of significance of the results is given in the table.
- (m) Fisher's test - The degree of significance of the results is given in the table.
- (n) Fisher's test - The degree of significance of the results is given in the table.
- (o) Fisher's test - The degree of significance of the results is given in the table.
- (p) Fisher's test - The degree of significance of the results is given in the table.
- (q) Fisher's test - The degree of significance of the results is given in the table.
- (r) Fisher's test - The degree of significance of the results is given in the table.
- (s) Fisher's test - The degree of significance of the results is given in the table.
- (t) Fisher's test - The degree of significance of the results is given in the table.
- (u) Fisher's test - The degree of significance of the results is given in the table.
- (v) Fisher's test - The degree of significance of the results is given in the table.
- (w) Fisher's test - The degree of significance of the results is given in the table.
- (x) Fisher's test - The degree of significance of the results is given in the table.
- (y) Fisher's test - The degree of significance of the results is given in the table.
- (z) Fisher's test - The degree of significance of the results is given in the table.

The treatment of the "group" hypothesis is discussed in the appendix of this report, which is given in the following table:

The treatment of the "group" hypothesis is discussed in the appendix of this report, which is given in the following table:

The modification introduced by Von Fange was to create an inherent skewness in the test to compensate for the skewness of the results caused by the response set of the subjects to select the top half of the response alternatives.⁴⁵ The purpose of this procedure was to increase the probability of obtaining results that approximated a normal curve and to increase the degree of discrimination between levels of satisfaction.

Evidence of test validity, other than face validity, and reliability was not provided by Andrews or Van Fange. In this study, the analysis utilizing the satisfaction scores obtained by two administrations of the questionnaire yielded a coefficient of stability of .78. The coefficient was significant at the .01 level.

Principal Evaluation Questionnaire (See Appendix E)

The study made use of a rating scale provided by Strauss and Sayles⁴⁶ and modified by the writer for suitability in principal evaluation. The teachers were asked to evaluate the principal on ten items by selecting a response from the five alternatives: "Exceptional," "Very Good," "Good," "Fair," and "Poor." These were assigned weightings of 5, 4, 3, 2, and 1, respectively. Each item was assumed to have equal weight, therefore, the total score was obtained by adding the responses on each of the items.

⁴⁵Van Fange, op. cit., p. 56.

⁴⁶G. T. Strauss and L. R. Sayles, Personnel: The Human Problems of Management, p. 530.

The modification proposed by the Board was to delete the word "and" from the first sentence of the first paragraph of the first article of the constitution and to insert the word "or" in the second sentence of the first article of the constitution. The Board also proposed to delete the word "and" from the second sentence of the first article of the constitution and to insert the word "or" in the second sentence of the first article of the constitution. The Board also proposed to delete the word "and" from the second sentence of the first article of the constitution and to insert the word "or" in the second sentence of the first article of the constitution.

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Very truly yours,
The Board

Attest:
The Board

The limitations of this scale are obvious. Unless all raters agree on what is meant by such terms as "good" or "excellent," their final ratings simply cannot be compared. Another limitation is a product of the global and therefore somewhat "fuzzy" elements that each of the items attempted to measure. The elements under study were mainly in the eye of the beholder and there was undoubtedly a halo effect in the selection of the responses. Since the researcher has interpreted the results in terms of teachers' satisfaction with the performance of the principal and has not been concerned with the level of adequacy of this performance, then the writer feels that these limitations rather than having distracted from the validity may have enhanced it for the purposes of this study.

Strauss and Sayles have provided no evidence of the validity and reliability of this questionnaire. No effort was made in this study to ascertain the congruent validity of the Principal Evaluation Questionnaire but a coefficient of stability, significant at the .01 level, of .76 was obtained. This indicates that the questionnaire was a stable measure.

IV. STATISTICAL PROCEDURES

The purpose of this section is to outline some of the assumptions with respect to the scale of measurement reached by each of the items and questionnaires, note the major statistical procedures utilized to describe some methods used to obtain certain scores and give an account

[illegible]

of some less commonly known statistical procedures. A statement of the assumptions underlying the parametric statistics employed and some of the literature pertaining to these assumptions conclude this section. The details of the statistical procedures followed in the testing of each hypothesis are delineated in Chapter V.

It has been assumed that the scores obtained on the professionalism questionnaire, the rate of interaction and strength of sentiment items of the School Social Organization Questionnaire, the Teacher Satisfaction Questionnaire and the Principal Evaluation Questionnaire were at an interval scale of measurement.⁴⁷ The scores obtained on the technical and social esteem items of the School Social Organization Questionnaire were assumed to be at an ordinal scale of measurement.

In the analysis of the data parametric statistical procedures have been utilized only when interval variables were being studied. These parametric statistical procedures included the commonly known one-way analysis of variance, analysis of co-variance, principal-axis factor analysis, product-moment correlation and the tests associated with each. When ordinal variables entered into the analysis appropriate non-parametric statistical procedures were followed. These included the Spearman rank correlation, the Kruskal-Wallis analysis of variance, and the chi square test of independence.

⁴⁷The justification for and the importance of this assumption are outlined by Ferguson, op. cit., pp. 12-16.

As was previously noted, a person's technical and social esteem rank corresponded to the rank of the median value granted him by the other members of his teacher group on each of the dimensions.

In order to test the relationship between the principals' social and technical esteem and professional role orientation, as proposed in Hypothesis Ten, it was necessary to rank the principals on each of the esteem scales. Since the schools varied in the number of faculty members it was necessary to use an esteem index to achieve the desired ranking. This index was obtained by dividing the esteem rank granted by the teacher group by the number of teachers in the group minus one. These indices were then ranked.

The identification of subgroups and their membership was achieved by employing an adaptation of the matrix analysis techniques advocated by Blocker et al.⁴⁸ These writers have suggested:

The subgroups were determined by a direct factoring of the cubed reciprocated choice matrix; that value which was the best representation of the relationship between Member I and Member J. An arbitrary figure of a 1.00 loading was found to be most productive in determining subgroup membership. For those persons who were not members of a particular subgroup, the loading on that subgroup gave an indication of their relationship to it. Members with high loadings on several subgroups were considered to be inter-subgroup persons, or those who tied subgroups together.⁴⁹

The cubed reciprocated choice matrix gives the number of tertiary choice links between each member and every other member while the

⁴⁸Clyde E. Blocker, Robert H. McCave and Albert J. Pendergast, A Method for the Sociometric Analysis of the Informal Organization Within Large Work Groups, pp. 26-29.

⁴⁹Ibid., p. 29.

The first of these is the fact that the number of cases is small.

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values in the main diagonal of the matrix gives the number of three-step choice links from an individual back to himself. As Blocker et al. state, " . . . the values in the main diagonal of the cubed reciprocated matrix were indications of subgroup membership . . . " ⁵⁰ By factor analyzing this matrix the subgroups and their membership can be identified. Blocker et al. indicated that they used the University of Texas Computer Program No. UTG2-02-000 by Jennings, entitled "Inter-correlation, Principal Axis Factor Analysis, and Normalized Varimax Rotation" for this purpose. The Jennings' program is a computer application of the Householder solution to principal-axis factor analysis. When the data from this study were factor analysed by this program, computer underflows were encountered. This was attributed to the fact that in each school there were a number of individuals that did not receive reciprocated choices thereby having a vector mean and standard deviation of zero in the cubed reciprocated choice matrix. The Householder solution has a mathematical model for obtaining the eigenvalues and eigenvectors that does not allow for null vectors. Since the Hotelling solution obtains these values by an alternative procedure that allows for null vectors, this solution was employed. The criterion of a factor loading of one, recommended by Blocker et al., for identifying

⁵⁰Ibid., p. 27.

members of subgroups is virtually impossible to obtain and if this loading was secured the entire variance for that individual would be attributed to one factor thereby identifying only the most tightly knit cliques where every member chose every other member of the subgroup including himself. The writer has accepted a factor loading of .500 as indicating membership in a subgroup since the members identified by this procedure most closely duplicated the subgroups identified by inspection of the corresponding sociograms. The number of subgroups was taken to be the number of factors having eigenvalues greater than one.

A change in the values placed in the first order reciprocated choice matrix constituted another alteration in the procedure for identifying members of subgroups. Blocker et al. placed zeros in the diagonals of this matrix.⁵¹ In this study it was found that when the matrix was cubed and the cubed matrix factor analysed those stars in the subgroups with links outside the subgroup were not identified as members of the subgroup. For example, in a subgroup containing individuals LMNOP, LMO and P had reciprocated links with N and with one or two of the other members while N had links with all the members of the subgroup plus individuals X and Y: LMOP would be identified as members of this subgroup while N would not. It was found that by placing values

⁵¹Ibid., p. 25.

of one in the diagonal cells of the first order matrix, these individuals were identified if the majority of their links were within the subgroup.

Since this study relied heavily on the use of parametric statistical procedure a discussion of the assumptions of these techniques is necessary. Generally speaking, there are five basic requirements underlying parametric statistical procedures: the samples are randomly drawn from a population in which the variables under study are normally distributed, the variances are homogeneous, the contributions of the factors to total variance are additive, and there is linearity of regression among variables.⁵² This study has assumed that the first requirement, that of random sampling, has been met. The second requirement, that of normality of distribution of the variables in the population, has been assumed except in the case where the data indicated otherwise. The assumption of homogeneity of variance was tested by the Hartley Fmax test⁵³ and the reader can assume that this requirement was met unless otherwise indicated. The study has also assumed that the fourth requisite was met because, as Ferguson notes, in most cases there are no grounds to suspect the validity of this

⁵²See Ferguson, op. cit., p. 294; B Fruchter, Introduction to Factor Analysis, pp. 44ff; J. P. Guilford, Fundamental Statistics in Psychology and Education, p. 274; and B. J. Winer, Statistical Principles in Experimental Design, pp. 33-35, 58-59, 62-63, 92-95, 116-120, 123-124, 267-268, 579-581, 586.

⁵³Winer, op. cit., p. 93.

It was in the morning, while at the first dinner table, that the conversation was interrupted by the entrance of some ladies from the kitchen.

Some of the ladies, looking at the face of the speaker,

perceived immediately a resemblance to the personage in their face.

It was in vain, however, to search for the cause of this resemblance.

With respectful greetings to the ladies, the speaker rose

and, turning from a position in which his features could easily

be readily identified, he addressed the company, the subject-

matter of the lecture to which he had been invited, and there he

proceeded to deliver his lecture, which was well received.

At the conclusion, he was surrounded by the ladies, who

were surprised, that on account of the character of the lecture,

the ladies, who had been invited to the lecture, should have

attended the lecture. The speaker, in reply, said that he

was not at all surprised, and that he was sure that the

lecture was not only interesting, but also instructive.

He then turned to the ladies, and said that he was sure that

they would find it very interesting, and that he was sure that

The following is a list of the names of the ladies who attended the lecture, and of the names of the ladies who were invited to the lecture, and of the names of the ladies who were not invited to the lecture.

THE LADIES WHO ATTENDED THE LECTURE.

assumption.⁵⁴ Although the demand for linearity of regression was not investigated by the formal procedure of an analysis of variance to determine the proportion of variance due to linear regression and due to departures from linear regression, scatter diagrams were drawn for the various combinations of scores obtained by teachers in the first four schools and these diagrams conformed to a linear (elliptical) pattern. In no case did they suggest a significant curvilinear relationship.

Although the writer has not rigidly tested all the underlying requirements he feels that the procedures followed would detect gross departures and as Ferguson has noted with respect to the analysis of variance:

With most sets of real data the assumptions underlying the analysis of variance are, at best, only roughly satisfied. The raw data of experiments frequently do not exhibit the characteristics which the mathematical models require. One advantage of the analysis of variance is that reasonable departures from the assumptions of normality and homogeneity may occur without seriously affecting the validity of the inferences drawn from the data.⁵⁵

Conservative tests have been used in those cases where the failure to meet the requirements increases the probability of a Type I error. No effort has been made to statistically compensate for a Type 2 error where the probability of its occurrence has been increased.

⁵⁴Ferguson, op. cit., p. 295.

⁵⁵Ibid.

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In all cases where the results of a statistical procedure led to a statistical or non-statistical conclusion, that result was subjected to the appropriate test of significance and those reaching a level of significance less than .05 were accepted as conclusive and the null hypotheses were rejected.

SUMMARY

The purpose of this chapter has been to outline the procedures and instrumentation used to obtain and examine the data necessary to confirm or refute the hypotheses posed in Chapter II. The statement and interpretation of the results of this investigation are the subject of the next chapter.

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RESULTS

The purpose of this chapter is to present the results of the
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 The results of the investigation are presented in the following table.

CHAPTER V

ANALYSIS OF THE DATA

In this chapter the results of the data collection procedures outlined in Chapter IV are recorded and an analysis of the data concerning the hypotheses proposed in this study is presented. The first section is concerned with a description of the sample. The second section reports on the testing of the hypotheses and included the sources of the data, the procedures used in testing the hypotheses, the outcome of each testing, and a discussion of the results. The final section presents a summary of the results of the analyses described and discussed in this chapter.

I. DESCRIPTION OF THE SAMPLE

The sample consisten of 25 schools and their full-time staff members chosen from the Edmonton Public School System. Of the 38 schools in which the questionnaires were administered, six were dropped from the sample due to the fact that less than 66 per cent of the questionnaires were returned; seven were deleted for a variety of reasons such as the item by item discussion of the questionnaires by a school staff during a meeting at which the researcher was not present, the principal's initiation of changes in the administrative procedures that invalidated the results,

and the dispersal of staff members over two major buildings and two or more portable classrooms.

Table VI shows the sizes of the sample schools and the number of teachers returning completed questionnaires. The sample ranged in school size from 15 to 43 teachers with the average being 24.7. The percentage of returns ranges from 67 per cent to 100 per cent from individual schools and was 86 per cent from the total sample. The number of staff returns column of the Table is the significant one for the remainder of this report because teachers were excluded entirely from the sample if their Professional Role Orientation Questionnaire and School Social Organization Questionnaire were not fully completed. This action was necessary in view of the fact that the design of the study required the matching of data relative to the two principal sets of variables, professional role orientation and social structure.

Table VII contains the means, variances and standard deviations of the Professional Role Orientation Scale scores for schools. The school means ranged from 98.45 for school number 15 to 107.00 for school number 13. The mean for the total sample was 102.83. The chi-square value for the goodness of fit to the normal distribution of 43.16 with 32 degrees of freedom indicated that the Professional Role Orientation Scale scores for the total sample were normally distributed at the .05 level of significance. Table VIII indicates that there were significant differences among the means when the schools were grouped into quarters according to their mean professionalism scores.

TABLE VI

DISTRIBUTION OF SAMPLE SCHOOLS BY STAFF SIZE AND RETURNS

School Number	Total Number of Staff	Number of Staff Returning Completed Questionnaires	Percentage of Returns
1	17	17	100
3	15	13	87
4	23	20	87
5	15	13	87
6	19	17	89
7	24	17	71
9	18	15	83
10	21	17	81
12	18	18	100
13	18	12	67
14	25	19	76
15	33	31	94
16	31	30	97
17	36	33	92
18	30	29	97
19	32	22	69
21	43	36	84
22	38	29	76
25	31	29	94
27	24	19	79
28	25	24	96
29	17	14	82
30	22	18	82
31	17	15	88
33	22	22	100
TOTALS: 25	614	529	86

EXPERIMENTAL DATA FOR THE STUDY OF THE EFFECT OF TEMPERATURE ON THE RATE OF REACTION

Experiment Number	Concentration of Reactant A (M)	Concentration of Reactant B (M)	Time Taken (s)	Rate of Reaction (M/s)
1	0.1	0.1	100	0.001
2	0.2	0.1	50	0.002
3	0.1	0.2	100	0.001
4	0.2	0.2	50	0.002

TABLE VII

MEANS, VARIANCES, AND STANDARD DEVIATIONS OF
PROFESSIONAL ROLE ORIENTATION SCORES FOR
INDIVIDUAL SCHOOLS

School	N	X	S ²	S
1	17	102.47	66.91	8.18
3	13	105.00	64.80	8.05
4	20	105.35	101.16	10.08
5	13	105.00	35.28	5.94
6	17	101.29	111.51	10.56
7	17	102.71	55.80	7.47
9	15	101.67	52.56	7.25
10	17	104.59	78.85	8.88
12	18	101.89	50.55	7.11
13	12	107.00	132.71	11.52
14	19	106.16	91.78	9.58
15	31	98.45	55.20	7.43
16	30	103.40	96.43	9.82
17	33	103.39	62.09	7.88
18	29	103.21	127.92	11.31
19	22	104.77	108.58	10.42
21	36	105.17	106.71	10.33
22	29	100.93	111.72	10.57
25	29	102.72	79.57	8.92
27	19	104.11	162.82	12.76
28	24	101.13	102.41	10.12
29	14	99.43	110.19	11.84
30	18	101.17	131.79	11.48
31	15	101.33	56.85	7.54
33	22	100.71	108.58	10.42
TOTAL	529	102.83	96.77	9.84

TABLE 1

MEAN ANNUAL TEMPERATURES, PRECIPITATION, AND
HOURS OF SUNSHINE AT THE STATION

Year	1	2	3	4	5
1901	54.0	54.0	54.0	54.0	54.0
1902	54.0	54.0	54.0	54.0	54.0
1903	54.0	54.0	54.0	54.0	54.0
1904	54.0	54.0	54.0	54.0	54.0
1905	54.0	54.0	54.0	54.0	54.0
1906	54.0	54.0	54.0	54.0	54.0
1907	54.0	54.0	54.0	54.0	54.0
1908	54.0	54.0	54.0	54.0	54.0
1909	54.0	54.0	54.0	54.0	54.0
1910	54.0	54.0	54.0	54.0	54.0
1911	54.0	54.0	54.0	54.0	54.0
1912	54.0	54.0	54.0	54.0	54.0
1913	54.0	54.0	54.0	54.0	54.0
1914	54.0	54.0	54.0	54.0	54.0
1915	54.0	54.0	54.0	54.0	54.0
1916	54.0	54.0	54.0	54.0	54.0
1917	54.0	54.0	54.0	54.0	54.0
1918	54.0	54.0	54.0	54.0	54.0
1919	54.0	54.0	54.0	54.0	54.0
1920	54.0	54.0	54.0	54.0	54.0
1921	54.0	54.0	54.0	54.0	54.0
1922	54.0	54.0	54.0	54.0	54.0
1923	54.0	54.0	54.0	54.0	54.0
1924	54.0	54.0	54.0	54.0	54.0
1925	54.0	54.0	54.0	54.0	54.0
1926	54.0	54.0	54.0	54.0	54.0
1927	54.0	54.0	54.0	54.0	54.0
1928	54.0	54.0	54.0	54.0	54.0
1929	54.0	54.0	54.0	54.0	54.0
1930	54.0	54.0	54.0	54.0	54.0
1931	54.0	54.0	54.0	54.0	54.0
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1968	54.0	54.0	54.0	54.0	54.0
1969	54.0	54.0	54.0	54.0	54.0
1970	54.0	54.0	54.0	54.0	54.0
1971	54.0	54.0	54.0	54.0	54.0
1972	54.0	54.0	54.0	54.0	54.0
1973	54.0	54.0	54.0	54.0	54.0
1974	54.0	54.0	54.0	54.0	54.0
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1983	54.0	54.0	54.0	54.0	54.0
1984	54.0	54.0	54.0	54.0	54.0
1985	54.0	54.0	54.0	54.0	54.0
1986	54.0	54.0	54.0	54.0	54.0
1987	54.0	54.0	54.0	54.0	54.0
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1989	54.0	54.0	54.0	54.0	54.0
1990	54.0	54.0	54.0	54.0	54.0
1991	54.0	54.0	54.0	54.0	54.0
1992	54.0	54.0	54.0	54.0	54.0
1993	54.0	54.0	54.0	54.0	54.0
1994	54.0	54.0	54.0	54.0	54.0
1995	54.0	54.0	54.0	54.0	54.0
1996	54.0	54.0	54.0	54.0	54.0
1997	54.0	54.0	54.0	54.0	54.0
1998	54.0	54.0	54.0	54.0	54.0
1999	54.0	54.0	54.0	54.0	54.0
2000	54.0	54.0	54.0	54.0	54.0

The Newman-Keuls comparison between ordered means¹ shows that the means for groups A and B, the top and second quarters respectively, were significantly different at the .05 level than the mean for group D, the bottom quarter, while the mean for group A was also significantly different than the mean for group C. Table IX shows that when the same procedure was carried out with the scores of individuals within schools significant differences were found among the four groups in each and every school. The results presented in Tables VIII and IX demonstrate that there were significant differences in professional role orientation among schools and within schools. These results also give justification for the use of the quartile groupings as the basis of classifying the other variables under study for the analyses of variance. For interpretation of the results of these analyses note must be made of those instances where significant differences were not encountered among all four of the quartile groups.

II. TESTING THE HYPOTHESES

Hypothesis Number One

The first hypothesis stated that there would be "a positive relationship between the rates of emergent interaction within teacher groups

¹
B. J. Winer, Statistical Principles in Experimental Design,
p. 101.

TABLE VIII

ANALYSIS OF VARIANCE OF PROFESSIONAL ROLE ORIENTATION
 SCORES AMONG SCHOOLS CLASSIFIED ON THE BASIS
 OF QUARTILE GROUPS AND A NEWMAN-KEULS
 COMPARISON BETWEEN ORDERED MEANS

Source	M.S	DF	F	P
Between Groups	646.25	3	6.89	.0002
Within Groups	98.80	525		
Groups	A	B	C	D
Means	105.52	103.79	102.09	100.25
A	105.52	00 ^a	XX ^b	XX
B	103.79	00	00	XX
C	102.09		00	00
D	100.25			00

^aThe difference between the means was not significant at the .05 level.

^bThe difference between the means was significant at the .05 level.

TABLE IX

ANALYSIS OF VARIANCE OF PROFESSIONAL ROLE ORIENTATION
 SCORES CLASSIFIED ON THE BASIS OF WITHIN SCHOOL
 QUARTILE GROUPS AND A NEWMAN-KEULS
 COMPARISON BETWEEN THE ORDERED
 MEANS FOR EACH SCHOOL

School	N	F	P	Comparison Between Ordered Means*
1	17	55.63	<.001	<u>A</u> <u>B</u> <u>C</u> <u>D</u>
3	13	49.53	<.001	<u>A</u> <u>B</u> <u>C</u> <u>D</u>
4	20	25.50	<.001	<u>A</u> <u>B</u> <u>C</u> <u>D</u>
5	13	24.07	<.001	<u>A</u> <u>B</u> <u>C</u> <u>D</u>
6	17	18.32	<.001	<u>A</u> <u>B</u> <u>C</u> <u>D</u>
7	17	43.27	<.001	<u>A</u> <u>B</u> <u>C</u> <u>D</u>
9	15	30.72	<.001	<u>A</u> <u>B</u> <u>C</u> <u>D</u>
10	17	32.02	<.001	<u>A</u> <u>B</u> <u>C</u> <u>D</u>
12	18	8.46	.002	<u>A</u> <u>B</u> <u>C</u> <u>D</u>
13	12	44.50	<.001	<u>A</u> <u>B</u> <u>C</u> <u>D</u>
14	19	30.28	<.001	<u>A</u> <u>B</u> <u>C</u> <u>D</u>
15	31	35.49	<.001	<u>A</u> <u>B</u> <u>C</u> <u>D</u>
16	30	43.59	<.001	<u>A</u> <u>B</u> <u>C</u> <u>D</u>
17	33	85.55	<.001	<u>A</u> <u>B</u> <u>C</u> <u>D</u>
18	29	58.56	<.001	<u>A</u> <u>B</u> <u>C</u> <u>D</u>
19	22	47.27	<.001	<u>A</u> <u>B</u> <u>C</u> <u>D</u>
21	36	43.82	<.001	<u>A</u> <u>B</u> <u>C</u> <u>D</u>
22	29	62.25	<.001	<u>A</u> <u>B</u> <u>C</u> <u>D</u>
25	29	41.20	<.001	<u>A</u> <u>B</u> <u>C</u> <u>D</u>
27	19	30.49	<.001	<u>A</u> <u>B</u> <u>C</u> <u>D</u>
28	24	33.46	<.001	<u>A</u> <u>B</u> <u>C</u> <u>D</u>
29	14	38.53	<.001	<u>A</u> <u>B</u> <u>C</u> <u>D</u>
30	18	27.39	<.001	<u>A</u> <u>B</u> <u>C</u> <u>D</u>
31	15	10.35	<.002	<u>A</u> <u>B</u> <u>C</u> <u>D</u>
33	22	36.14	<.001	<u>A</u> <u>B</u> <u>C</u> <u>D</u>

*Groups underlined by a common segment of a line do not differ but differ significantly at the .05 level from groups underlined by other segments of that line: e.g., A B C D, group A and B are significantly different from groups C and D but A is not different from B nor is C different from D.

and the average professional role orientation of these groups."² The investigation was extended to determine not only if the hypothesized relationship was valid but if a positive relationship between the rate of emergent interaction and the extent of professional role orientation existed among individuals with the schools.

The perceived rate of interaction, attributed rate of interaction and professional role orientation data for individuals and schools were used to test this hypothesis and its extension.³ The statistical analysis of this data was in two parts; a correlational analysis and an analysis of variance or covariance. Using school data, Pearson product-moment correlations were obtained between the school means on the Professional Role Orientation Scale and on the Social interaction item. Using school staff size as a covariate, analyses of covariance of perceived and attributed rates of interaction scores classified on the basis of among schools professional role orientation quartile groups were performed. The analyses of covariance were necessary because a preliminary test yielded Pearson product-moment correlations of .65 and .57, both significant at the .01 level, between the size of school and the mean rates of perceived and attributed social interaction scores respectively, thereby demonstrating that the experimental design control on size had not been adequate. Using individual data, Pearson product-

²Supra, p. 83.

³Appendix F Contains the means and standard deviations of the emergent interaction variables for each school.

moment correlations were obtained between the professional role orientation scores and the rates of perceived and attributed interaction of individuals in each school and over the total sample. Analyses of variance of the perceived and attributed rates of interaction scores classified on the basis of within school quartile groups on the Professional Role Orientation Scale for each school were computed. Analyses of covariance of the total sample scores on the two rates of interaction classified on the basis of within school quartile groups with the size of school as the covariate were calculated. In all cases the accompanying tests of significance were executed.

The correlational analysis of the relationship between the rates of perceived and attributed emergent interaction within teacher groups and the average professional role orientation of these groups yielded Pearson product-moment correlations of -0.06 and -0.27 , respectively, which were not significant at the $.05$ level for a one-tailed or two-tailed test. Table X contains the results of the analysis of covariance of the perceived rates of emergent interaction scores among schools. The probability of $.44$ for obtaining an F_0 of 0.90 indicates that the differences among the groups classified according to the school mean on the Professional Role Orientation Scale were not significant at the $.05$ level after adjustments has been made for the linear effects of the size of school. The Newman-Keuls comparison indicates that the differences among pairs of adjusted means were not significant. The results of the analysis of

TABLE X

ANALYSIS OF COVARIANCE OF PERCEIVED RATE OF EMERGENT INTERACTION
 SCORES CLASSIFIED ON THE BASIS OF AMONG SCHOOLS PROFESSIONAL
 ROLE ORIENTATION QUARTILE GROUPS WITH SIZE OF SCHOOL AS
 COVARIATE AND A NEWMAN-KEULS COMPARISON
 OF ORDERED MEANS

Source		MS	DF	F	P
Between Groups		652.49	3	0.90	.44
Within Groups		721.34	524		
Groups		D	A	C	B
	Adjusted Means	62.66	59.66	58.73	57.64
D	62.66	---	00a	00	00
A	59.66		---	00	00
C	58.73			---	00
B	57.64				---

^aThe means do not differ significantly at the .05 level.

TABLE 1

Summary of results of the analysis of variance for the effect of the amount of water on the growth of the plants. The results are given in the form of the mean square values and the F-ratios. The F-ratios are compared with the critical values of the F-distribution for the appropriate degrees of freedom and the level of significance.

Source of variation	D.F.	Mean square	F-ratio	Significance
Water	2	10.00	10.00	0.05
Replication	2	1.00	1.00	0.40
Error	16	0.625		
Total	20			

The error is not further subdivided into 16 parts.

TABLE XI

ANALYSIS OF COVARIANCE OF ATTRIBUTED RATE OF EMERGENT INTERACTION
 SCORES CLASSIFIED ON THE BASIS OF AMONG SCHOOLS PROFESSIONAL
 ROLE ORIENTATION QUARTILE GROUPS WITH SIZE OF SCHOOL AS
 COVARIATE AND A NEWMAN-KEULS COMPARISON
 OF ORDERED MEANS

Source	MS	DF	F	P	
Between Groups	1,084.96	3	2.59	.052	
Within Groups	419.57	524			
Groups	D	C	B	A	
	Adjusted Means	56.30	53.88	52.14	49.29
D	56.30	--	00 ^a	00	xx ^b
C	53.88	--	00	00	00
B	52.14		--	00	00
A	49.29			--	--

^aThe means do not differ significantly at the .05 level.

^bThe means differ significantly at the .05 level.

covariance of attributed rate of emergent interaction scores are contained in Table XI. The F_0 value of 2.59 with a probability of .052 indicates that the differences among the means approaches significance at the .05 level. The Newman-Keuls comparison found the difference between the adjusted means of 49.29 and 56.30 for the top quartile A group and the bottom quartile D group respectively to be significant at the .05 level. This suggests that the schools falling in the bottom quarter in the distribution of schools on the Professional Role Orientation Scale had a higher attributed rate of social interaction than did the schools falling in the top quarter. Returns of 81.4, 86.2, 89.0 and 87.9 per cent for the A, B, C and D schools, respectively, indicate that the variations in the rate of returns with its accompanying significant effect on the attributed rate of interaction values may account for the differences among the groups which led to the low probability of the F value yielded by the analysis of covariance and the significant difference between the adjusted means for group A and D.

The results of the analysis testing the relationship presented in the extension to the hypothesis were similar to the results of the analysis of the hypothesis itself. The products of the correlational analysis, contained in Table XII, reveal that the relationships between the Professional Role Orientation scores and the perceived and attributed rate of interactions scores for individuals over the whole sample were not significant at the .05 level. The correlations of .09 and .03 connote that less than one per cent of the variances on the

TABLE XII

CORRELATIONS BETWEEN PROFESSIONAL ROLE ORIENTATION SCORES
AND PERCEIVED AND ATTRIBUTED RATE OF INTERACTION
SCORES FOR INDIVIDUALS IN EACH SCHOOL AND
FOR TOTAL SAMPLE

Schools	N	Perceived Interaction	Attributed Interaction	
A	3	13	-.18	-.59**
	4	20	.07	.16
	5	13	.27	-.14
	13	12	.03	.41
	14	19	.17	.10
	21	36	.17	.03
B	10	17	.05	.05
	16	30	.09	.09
	17	33	.04	.02
	18	29	-.11	.06
	19	22	.08	.17
	27	19	.29	.43*
C	1	17	.40	.22
	6	17	-.15	-.30
	7	17	.19	.21
	9	15	-.11	-.30
	12	18	.15	-.06
	15	29	-.01	-.05
	31	15	.28	.23
D	15	31	.21	.32*
	22	29	-.07	-.12
	28	24	.42*	.23
	29	14	-.42	-.52
	30	18	.09	-.15
	33	22	.37*	.41*
Total Sample	529	.09	.03	

* Significant at the .05 level, one-tailed test

** Significant at the .05 level, two-tailed test

interaction scores could be predicted from the knowledge of a person's professional role orientation. Two significantly positive Pearson product-moment correlations were obtained when the results of the Professional Role Orientation Scale and the perceived rate of social interaction for each school were compared. By chance alone, one would expect 1.25 significant correlations. The analysis of the relationship between professional role orientation and rate of interaction in each school yielded three significantly positive correlations and one significantly negative. It was of interest to note that the significantly negative correlation was obtained in a high professional school. Although the number of correlations exceed the number expected by chance there seemed to be no trend substantiating the hypothesized relationship. The results of the analyses of variance contained in Tables XIII and XIV indicate that when the perceived and attributed rate of interaction scores were grouped according to the Professional Role Orientation scores there was only one significant difference among the groups in the 25 schools. This was less than the number expected by chance. Similarly the Newman-Keuls comparisons among ordered means yielded significant results in only one school. The results of the analysis of covariance of the perceived and attributed rate of interaction scores classified on the basis of within school quartile groups on the Professional Role Orientation Scale and taken over the whole sample are contained in Tables XV and XVI, respectively. The 1.94 and 1.55 F values with probabilities of .12 and .20, respectively,

demonstrate that there were no significant differences among the means on the two estimates of the rate of emergent interaction. The Newman-Keuls results show that there were no significant differences between any of the pairs of ordered means.

Discussion. The almost complete absence of significant relationships between the rates of emergent interaction within schools and the average professional role orientation of their teacher group indicate that Hypothesis One has not been substantiated by the data collected from the sample of 25 schools. The correlational analysis yielded negative but insignificant correlations between the average professional role orientation and the mean perceived and attributed rate of emergent interaction scores for schools. The analysis of covariance using perceived rate of interaction data found no significant differences among nor between the groups classified on the basis of the school's quartile membership on the Professional Role Orientation Scale. The analysis of covariance using attributed rate of interaction data found that the differences among the groups approached significance and the difference between the top and bottom quartile was significant at the .05 level. These differences could be explained by the variation in the percentage of returned questionnaires. In summary, for this sample the degree of professional role orientation prevalent in a school had no significant relationship with the school's rate of emergent interaction.

TABLE XIII

ANALYSIS OF VARIANCE OF PERCEIVED RATE OF INTERACTION
 SCORES CLASSIFIED ON THE BASIS OF WITHIN SCHOOL
 PROFESSIONAL ROLE ORIENTATION QUARTILE
 GROUPS AND A NEWMAN-KEULS COMPARISON
 BETWEEN THE ORDERED MEANS
 FOR EACH SCHOOL

School	N	F	P	Comparison Between Ordered Means*	
A	3	13	0.57	.65	D B C A
	4	20	0.86	.48	B C D A
	5	13	0.33	.81	A B D C
	13	12	0.07	.97	A D C B
	14	19	0.30	.83	A B D C
	21	36	0.54	.66	A D B C
B	10	17	0.38	.77	C B A D
	16	30	0.56	.65	A D B C
	17	33	0.07	.98	B A D C
	18	29	0.26	.86	D A B C
	19	22	0.84	.49	D A C B
	27	19	1.04	.40	A D B C
C	1	17	1.75	.21	C B A D
	6	17	0.30	.82	D B A C
	7	17	0.33	.80	C A B D
	9	15	1.03	.42	C B A D
	12	18	2.53	.10	A D C B
	25	29	0.31	.82	C A B D
	31	15	0.88	.48	A B D C
D	15	31	2.04	.13	C A B D
	22	29	1.17	.34	C B A D
	28	24	0.91	.45	A C B D
	29	14	0.61	.62	C B D A
	30	18	0.19	.90	C A D B
	33	22	5.55	.01	<u>C A B D</u>

*Groups underlined by a common segment of a line do not differ but differ significantly at the .05 level from groups underlined by other segments of that line.

TABLE XIV

ANALYSIS OF VARIANCE OF ATTRIBUTED RATE OF INTERACTION
 SCORES CLASSIFIED ON THE BASIS OF WITHIN SCHOOL
 PROFESSIONAL ROLE ORIENTATION QUARTILE
 GROUPS AND A NEWMAN-KEULS COMPARISON
 BETWEEN THE ORDERED MEANS
 FOR EACH SCHOOL

School	N	F	P	Comparison Between Ordered Means*
3	13	2.97	.09	C D B A
4	20	0.43	.73	A C D B
5	13	0.43	.74	D B A C
13	12	1.08	.41	A B D C
14	19	1.16	.36	C A B D
21	36	0.31	.82	A D B C
10	17	1.15	.37	C A D B
16	30	0.10	.96	D A C B
17	33	0.17	.91	A D B C
18	29	1.02	.40	A C D B
19	22	1.58	.23	D A C B
27	19	1.10	.38	A C D B
1	17	0.43	.74	B A D C
6	17	0.87	.48	D B A C
7	17	0.37	.78	C B A D
9	15	0.35	.79	C B D A
12	18	0.30	.83	C D B A
25	29	1.09	.37	C B A D
31	15	1.00	.43	A B D C
15	31	1.03	.39	A C B D
22	29	0.18	.91	B C A D
28	24	1.11	.37	C A B D
29	14	1.87	.20	C B D A
30	18	0.27	.84	C B D A
33	22	2.43	.10	C A B D

*Groups underlined by a common segment of a line do not differ but differ significantly at the .05 level from groups underlined by other segments of that line.

TABLE XV

ANALYSIS OF COVARIANCE OF PERCEIVED RATE OF EMERGENT
INTERACTION SCORES FOR THE TOTAL SAMPLE CLASSIFIED
ON THE BASIS OF WITHIN SCHOOL PROFESSIONAL ROLE
ORIENTATION QUARTILE GROUPS WITH SIZE OF
SCHOOL AS COVARIATE AND A NEWMAN-KEULS
COMPARISON OF ORDERED MEANS

Source	MS	DF	F	P
Between Groups	1,394.11	3	1.94	.12
Within Groups	717.09	524		
Groups	A	C	B	D
Adjusted Means	62.98	61.57	58.67	55.74
A	62.98	--	00	00*
C	61.57	--	00	00
B	58.67		--	00
D	55.74			--

* The difference between the means was not significant at the .05 level.

IT 1930

THESE ARE THE RESULTS OF RESEARCH TO DETERMINE
 THE EFFECTS OF THE VARIOUS FACTORS ON THE
 GROWTH OF THE PLANT. THE RESULTS ARE
 GIVEN IN THE FOLLOWING TABLES. THE
 DATA WERE OBTAINED FROM A SERIES OF
 EXPERIMENTS CONDUCTED IN 1930.

TABLE I					GROWTH	
1	2	3	4	5	6	7
1.1	1.2	1.3	1.4	1.5	1.6	1.7
2	3	4	5	6	7	8
TABLE II					GROWTH	
1	2	3	4	5	6	7
1.1	1.2	1.3	1.4	1.5	1.6	1.7
2	3	4	5	6	7	8
3	4	5	6	7	8	9
4	5	6	7	8	9	10

THESE ARE THE RESULTS OF RESEARCH TO DETERMINE THE EFFECTS OF THE VARIOUS FACTORS ON THE GROWTH OF THE PLANT. THE RESULTS ARE GIVEN IN THE FOLLOWING TABLES. THE DATA WERE OBTAINED FROM A SERIES OF EXPERIMENTS CONDUCTED IN 1930.

TABLE XVI

ANALYSIS OF COVARIANCE OF ATTRIBUTED RATE OF EMERGENT
INTERACTION SCORES FOR THE TOTAL SAMPLE CLASSIFIED
ON THE BASIS OF WITHIN SCHOOL PROFESSIONAL ROLE
ORIENTATION QUARTILE GROUPS WITH SIZE OF
SCHOOL AS COVARIATE AND A NEWMAN-KEULS
COMPARISON OF ORDERED MEANS

Source		MS	DF	F	P
Between Groups		653.81	3	1.55	.20
Within Groups		422.04	524		
Groups		A	C	B	D
Adjusted Means		55.00	54.98	51.49	50.86
A	55.00	--	00	00	00
C	54.98		--	00	00
B	51.49			--	00
D	50.86				--

TABLE 7

ANALYSIS OF DATA OBTAINED FROM EXPERIMENTAL STUDIES OF THE EFFECT OF TEMPERATURE ON THE RATE OF GROWTH OF THE BACTERIA *ESCHERICHIA COLI* IN A MEDIUM OF 10% BACTERIAL BROTH AND 90% WATER. THE DATA WERE OBTAINED FROM A SERIES OF EXPERIMENTS IN WHICH THE TEMPERATURE WAS VARYING FROM 10°C. TO 40°C. IN STEPS OF 5°C. THE RESULTS ARE GIVEN IN THE FOLLOWING TABLE.

GROWTH OF <i>ESCHERICHIA COLI</i> IN 10% BACTERIAL BROTH AND 90% WATER AT DIFFERENT TEMPERATURES				
Time (hours)	10°C.	15°C.	20°C.	25°C.
0	1.0	1.0	1.0	1.0
1	1.0	1.5	2.0	3.0
2	1.0	2.0	3.0	6.0
3	1.0	3.0	6.0	12.0
4	1.0	4.0	12.0	24.0
5	1.0	6.0	24.0	48.0
6	1.0	9.0	48.0	96.0
7	1.0	12.0	96.0	192.0
8	1.0	18.0	192.0	384.0
9	1.0	24.0	384.0	768.0
10	1.0	36.0	768.0	1536.0
11	1.0	48.0	1536.0	3072.0
12	1.0	72.0	3072.0	6144.0
13	1.0	96.0	6144.0	12288.0
14	1.0	144.0	12288.0	24576.0
15	1.0	192.0	24576.0	49152.0
16	1.0	288.0	49152.0	98304.0
17	1.0	384.0	98304.0	196608.0
18	1.0	576.0	196608.0	393216.0
19	1.0	768.0	393216.0	786432.0
20	1.0	1152.0	786432.0	1572864.0
21	1.0	1536.0	1572864.0	3145728.0
22	1.0	2304.0	3145728.0	6291456.0
23	1.0	3072.0	6291456.0	12582912.0
24	1.0	4608.0	12582912.0	25165824.0
25	1.0	6144.0	25165824.0	50331648.0
26	1.0	9216.0	50331648.0	100663296.0
27	1.0	12288.0	100663296.0	201326592.0
28	1.0	18432.0	201326592.0	402653184.0
29	1.0	24576.0	402653184.0	805306368.0
30	1.0	36864.0	805306368.0	1610612736.0
31	1.0	49152.0	1610612736.0	3221225472.0
32	1.0	73728.0	3221225472.0	6442450944.0
33	1.0	98304.0	6442450944.0	12884901888.0
34	1.0	147456.0	12884901888.0	25769803776.0
35	1.0	196608.0	25769803776.0	51539607552.0
36	1.0	294912.0	51539607552.0	103079215104.0
37	1.0	393216.0	103079215104.0	206158430208.0
38	1.0	589824.0	206158430208.0	412316860416.0
39	1.0	786432.0	412316860416.0	824633720832.0
40	1.0	1179648.0	824633720832.0	1649267441664.0

Similarly, the extension to Hypothesis One, stating that a positive relationship between the rate of emergent interaction and the extent of professional role orientation existed among individuals within the schools, was not substantiated by the results. The correlational analysis of professional role orientation and rates of interaction data for each school yielded a number of significant correlations that could be accounted for by chance. No trend in the correlations among the schools was discernible. When the scores of all individuals in the sample on the Professional Role Orientation Scale and the social interaction item were correlated the resultant coefficients were not significant at the .05 level. The analysis of variance of the perceived and attributed interaction scores found that only in school 33 was there a significant difference among the perceived rate of interaction scores for the quartile groups and this could be attributed to a chance occurrence. The analysis of covariance of the perceived and attributed interaction scores for all individuals in the sample, classified on the basis of their within school Professional Role Orientation quartile membership, found no significant differences among nor between the groups. These results indicate that for this sample of individuals there was no consistently significant relationship between their professional role orientation and their perceived and attributed rate of social interaction.

Similarly, the admission to the school is not a

simple admission, as it is not a simple admission.

In order to be admitted to the school, the student

must be admitted to the school, and not

admitted to the school, and not admitted to the school.

Admission to the school is not a simple admission.

Admission to the school is not a simple admission.

Admission to the school is not a simple admission.

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Admission to the school is not a simple admission.

Admission to the school is not a simple admission.

Hypothesis Number Two

The second hypothesis stated "The strength of the sentiments of friendship within teacher groups will be positively related to their average professional role orientation."⁴ This relationship for schools and individuals within schools was investigated.

The strength of sentiment and professional role orientation data for individuals and schools were used. The school data consisted of the mean scores of the individuals in the school on each of these variables.⁵ The statistical procedures were twofold, a correlational analysis of the relationship between the two variables and an analysis of variance of the strength of sentiment data classified on the basis of quartile groups on the Professional Role Orientation Scale within schools and among schools. Using school data, a Pearson product-moment correlation between the school means on the Professional Role Orientation Scale and on the strength of sentiment item of the School Social Organization Questionnaire was computed. An analysis of variance of the strength of sentiment scores classified on the basis of among schools professional role orientation quartile groups was executed and Newman-Keuls comparisons between ordered means

⁴Supra, p. 83.

⁵ Appendix F contains the means and standard deviations of the strength of sentiment scores for each school.

were made. Using individual data to determine if the hypothesized relationship existed for individuals within schools, the same procedures were used and the analyses of variance of the strength of sentiment data for each school and over all schools were classified on the basis of within school professional role orientation quartile groups. In all cases the accompanying tests of significance were executed.

The correlational analysis of the relationship between school professional role orientation and school strength of sentiment yielded a Pearson product-moment correlation of .16, which was not significant at the .05 level. Table XVII contains the results of the analysis of variance of the strength of sentiment data among schools and the Newman-Keuls comparisons. The F value of 1.82 with a probability of .14 indicates that the differences among the school means on the strength of sentiment item when the schools were classified according to their mean professional role orientation were not significant. The Newman-Keuls comparisons found no significant differences among the ordered pairs of these means. The results of the analyses on school data indicate that there was not a significant relationship between the school's professional role orientation and the within school strength of sentiments of friendship.

The results of the correlational analysis of the strength of sentiment and professional role orientation data for individuals within

TABLE XVII

ANALYSIS OF VARIANCE OF SCHOOL STRENGTH OF SENTIMENT SCORES
CLASSIFIED ON THE BASIS OF AMONG SCHOOL PROFESSIONAL
ROLE ORIENTATION QUARTILE GROUPS AND A NEWMAN-
KEULS COMPARISON BETWEEN ORDERED MEANS

Source	MS	DF	F	P
Between Groups	15.14	3	1.82	.14
Within Groups	8.30	524		

Groups	B	A	D	C
Means	2.89	2.63	2.51	2.09
B	2.89	00*	00	00
A	2.63	--	00	00
D	2.51		--	00
C	2.09			--

*The difference between the means was not significant at the .05 level.

each school and over the total sample are shown in Table XVIII. In schools 14, 27 and 25 and for the total sample there were significant and positive correlations between the two variables. Since the chi-square test of goodness of fit of the strength of sentiment scores for the total sample to the normal distribution yielded a chi-square value of 255.45 with eight degrees of freedom indicating that these data were not normally distributed and since the F_{\max} value of 11.74, significant at the .01 level, was obtained when the variances of the two distributions were compared, then the correlations recorded in Table XVIII are conservative estimates of the true relationship. When a correlation ratio was calculated between the two variables over the total sample, a correlation of .24 was obtained. This correlation was significant at the .05 level. If correlation ratios were computed using the individuals within schools data it can be assumed that more significant correlations would be procured. The results of the correlational analysis indicate that there was a significant and positive relationship between a person's professional role orientation and his strength of sentiment of friendship with other staff members. The results of the analyses of variance are shown in Table XIX. When the total sample scores on the strength of sentiment item were classified on the basis of within school professional role orientation, the F_0 value of 5.65 with a probability of less than .001 indicates that there were significant differences in the strength of sentiment held among the groups. The top quartile group, group A, was found to

TABLE XVIII

CORRELATIONS BETWEEN PROFESSIONAL ROLE ORIENTATION AND
STRENGTH OF SENTIMENT SCORES FOR INDIVIDUALS
IN EACH SCHOOL AND FOR TOTAL SAMPLE

	School	N	r
A	3	13	.26
	4	20	-.23
	5	13	-.30
	13	12	-.15
	14	19	.64*
	21	36	.27
B	10	17	-.05
	16	30	.23
	17	33	.18
	18	29	.06
	19	22	.07
	27	19	.43*
C	1	17	.40
	6	17	-.36
	7	17	.31
	9	15	.38
	12	18	.24
	25	29	.48
	31	15	-.13
D	15	31	-.12
	22	29	.30
	28	24	.20
	29	14	.19
	30	18	.02
	33	22	.28
Total Sample		529	.18*

*Significant at the .05 level - - one-tailed test.

TABLE XIX

ANALYSIS OF VARIANCE OF SCHOOL STRENGTH OF SENTIMENT SCORES
CLASSIFIED ON THE BASIS OF WITHIN SCHOOL PROFESSIONAL
ROLE ORIENTATION QUARTILE GROUPS AND A NEWMAN-
KEULS COMPARISON BETWEEN ORDERED MEANS

	School	N	F	P	Comparison Between Ordered Means*
A	3	13	.54	.67	B C A D
	4	20	0.13	.94	B D C A
	5	13	0.59	.64	D C B A
	13	12	1.74	.24	C B D A
	14	19	8.67	.01	<u>A B</u> <u>D C</u>
	21	36	1.86	.16	B A C D
B	10	17	1.35	.30	C A D B
	16	30	0.99	.42	A B D C
	17	33	1.36	.28	A B D C
	18	29	0.73	.54	D A C B
	19	22	0.24	.87	D B A C
	27	19	1.69	.21	A B C D
C	1	17	2.65	.09	A D B C
	6	17	0.83	.50	D C B A
	7	17	2.00	.16	A B D C
	9	15	0.94	.45	A C D B
	12	18	1.02	.41	B C A D
	25	29	1.20	.33	A C B D
	31	15	1.37	.30	B C A D
D	15	31	0.77	.52	C D B A
	22	29	0.92	.44	B A C D
	28	24	0.80	.51	A C B D
	29	14	0.49	.70	A C D B
	30	18	0.18	.91	C A D B
	33	22	4.39	.02	<u>A D</u> <u>C B</u>
Total Sample		529	5.65	.001	<u>A B C D</u>

*Groups underlined by a common segment of a line do not differ but differ significantly at the .05 level from groups underlined by other segments of that line.

TABLE III

ANALYSIS OF SAMPLES OF POLYMERIZATION OF VINYL MONOMERS
CARRIED OUT IN THE LABORATORY OF THE INSTITUTE OF CHEMISTRY
OF THE ACADEMY OF SCIENCES OF THE USSR
IN THE LABORATORY OF POLYMERIZATION

Sample	1	2	3	4
0.1	0.1	0.1	0.1	0.1
0.2	0.2	0.2	0.2	0.2
0.3	0.3	0.3	0.3	0.3
0.4	0.4	0.4	0.4	0.4
0.5	0.5	0.5	0.5	0.5
0.6	0.6	0.6	0.6	0.6
0.7	0.7	0.7	0.7	0.7
0.8	0.8	0.8	0.8	0.8
0.9	0.9	0.9	0.9	0.9
1.0	1.0	1.0	1.0	1.0
1.1	1.1	1.1	1.1	1.1
1.2	1.2	1.2	1.2	1.2
1.3	1.3	1.3	1.3	1.3
1.4	1.4	1.4	1.4	1.4
1.5	1.5	1.5	1.5	1.5
1.6	1.6	1.6	1.6	1.6
1.7	1.7	1.7	1.7	1.7
1.8	1.8	1.8	1.8	1.8
1.9	1.9	1.9	1.9	1.9
2.0	2.0	2.0	2.0	2.0
2.1	2.1	2.1	2.1	2.1
2.2	2.2	2.2	2.2	2.2
2.3	2.3	2.3	2.3	2.3
2.4	2.4	2.4	2.4	2.4
2.5	2.5	2.5	2.5	2.5
2.6	2.6	2.6	2.6	2.6
2.7	2.7	2.7	2.7	2.7
2.8	2.8	2.8	2.8	2.8
2.9	2.9	2.9	2.9	2.9
3.0	3.0	3.0	3.0	3.0
3.1	3.1	3.1	3.1	3.1
3.2	3.2	3.2	3.2	3.2
3.3	3.3	3.3	3.3	3.3
3.4	3.4	3.4	3.4	3.4
3.5	3.5	3.5	3.5	3.5
3.6	3.6	3.6	3.6	3.6
3.7	3.7	3.7	3.7	3.7
3.8	3.8	3.8	3.8	3.8
3.9	3.9	3.9	3.9	3.9
4.0	4.0	4.0	4.0	4.0
4.1	4.1	4.1	4.1	4.1
4.2	4.2	4.2	4.2	4.2
4.3	4.3	4.3	4.3	4.3
4.4	4.4	4.4	4.4	4.4
4.5	4.5	4.5	4.5	4.5
4.6	4.6	4.6	4.6	4.6
4.7	4.7	4.7	4.7	4.7
4.8	4.8	4.8	4.8	4.8
4.9	4.9	4.9	4.9	4.9
5.0	5.0	5.0	5.0	5.0
5.1	5.1	5.1	5.1	5.1
5.2	5.2	5.2	5.2	5.2
5.3	5.3	5.3	5.3	5.3
5.4	5.4	5.4	5.4	5.4
5.5	5.5	5.5	5.5	5.5
5.6	5.6	5.6	5.6	5.6
5.7	5.7	5.7	5.7	5.7
5.8	5.8	5.8	5.8	5.8
5.9	5.9	5.9	5.9	5.9
6.0	6.0	6.0	6.0	6.0
6.1	6.1	6.1	6.1	6.1
6.2	6.2	6.2	6.2	6.2
6.3	6.3	6.3	6.3	6.3
6.4	6.4	6.4	6.4	6.4
6.5	6.5	6.5	6.5	6.5
6.6	6.6	6.6	6.6	6.6
6.7	6.7	6.7	6.7	6.7
6.8	6.8	6.8	6.8	6.8
6.9	6.9	6.9	6.9	6.9
7.0	7.0	7.0	7.0	7.0
7.1	7.1	7.1	7.1	7.1
7.2	7.2	7.2	7.2	7.2
7.3	7.3	7.3	7.3	7.3
7.4	7.4	7.4	7.4	7.4
7.5	7.5	7.5	7.5	7.5
7.6	7.6	7.6	7.6	7.6
7.7	7.7	7.7	7.7	7.7
7.8	7.8	7.8	7.8	7.8
7.9	7.9	7.9	7.9	7.9
8.0	8.0	8.0	8.0	8.0
8.1	8.1	8.1	8.1	8.1
8.2	8.2	8.2	8.2	8.2
8.3	8.3	8.3	8.3	8.3
8.4	8.4	8.4	8.4	8.4
8.5	8.5	8.5	8.5	8.5
8.6	8.6	8.6	8.6	8.6
8.7	8.7	8.7	8.7	8.7
8.8	8.8	8.8	8.8	8.8
8.9	8.9	8.9	8.9	8.9
9.0	9.0	9.0	9.0	9.0
9.1	9.1	9.1	9.1	9.1
9.2	9.2	9.2	9.2	9.2
9.3	9.3	9.3	9.3	9.3
9.4	9.4	9.4	9.4	9.4
9.5	9.5	9.5	9.5	9.5
9.6	9.6	9.6	9.6	9.6
9.7	9.7	9.7	9.7	9.7
9.8	9.8	9.8	9.8	9.8
9.9	9.9	9.9	9.9	9.9
10.0	10.0	10.0	10.0	10.0

* Values in parentheses are calculated from the data in the table.
The values in parentheses are calculated from the data in the table.
The values in parentheses are calculated from the data in the table.

have a mean score significantly higher than groups B, C and D when a comparison was made among the ordered means. These means were 3.35, 2.63, 2.20 and 2.03 for the four groups, respectively. The ordering of the strength of sentiment means directly corresponded to the ordering of the professional role orientation classifications. However, only in schools 21 and 33 were there significant differences among and between the group means.

Discussion. The results of the analyses of the relationship between the strength of the sentiments of friendship within a teacher group and their average professional role orientation indicated that Hypothesis Two should be rejected. The correlational analysis yielded a Pearson product-moment correlation of .16, which was not significant at the .05 level. No significant differences in strength of the sentiments of friendship were found among nor between the means of the schools when grouped according to their average professional role orientation.

In the development of the theory from which Hypothesis Two was derived the contention had been presented that if professional role orientation is a dominant social value in teacher groups this should lead to a higher degree of social interaction with the resultant effect of increasing the strength of sentiment among the teacher group. The core value of professionalism, that the writer had felt would promote social interaction and the development of close friendship, was the

It is a very common observation that the strength of the group is not a function of the number of members, but of the quality of the members. The strength of the group is a function of the quality of the members, not of the number of members. The strength of the group is a function of the quality of the members, not of the number of members. The strength of the group is a function of the quality of the members, not of the number of members.

Discussion. The results of the analysis of the relationship between the strength of the relationship of the group and the quality of the members are as follows: (1) The strength of the relationship is a function of the quality of the members, not of the number of members. (2) The strength of the relationship is a function of the quality of the members, not of the number of members. (3) The strength of the relationship is a function of the quality of the members, not of the number of members. (4) The strength of the relationship is a function of the quality of the members, not of the number of members. (5) The strength of the relationship is a function of the quality of the members, not of the number of members.

It is the development of the group that is the key to the success of the group. The development of the group is a function of the quality of the members, not of the number of members. The development of the group is a function of the quality of the members, not of the number of members. The development of the group is a function of the quality of the members, not of the number of members. The development of the group is a function of the quality of the members, not of the number of members. The development of the group is a function of the quality of the members, not of the number of members.

orientation to professional colleagues. When the scores for the total sample on the Colleague sub-scale of the Professional Role Orientation Scale were correlated with the perceived rate of interaction, attributed rate of interaction, and strength of the sentiments of friendship scores the values of .03, .06 and .07, respectively, were obtained indicating that there was no significant relationship between orientation to professional colleagues and these social structure variables. It would also follow from the theoretical development that if Hypothesis One was rejected one would expect Hypothesis Two also to be rejected because Hypothesis Two presupposed the acceptance of Hypothesis One. If Hypothesis Two was not rejected one would suspect the presence of mediating variables. The rejection of Hypothesis Two gives weight to Homans' theory but adds evidence to support the rejection of the major premise of this study that professional role orientation is a dominant social value among teacher groups.

The analyses of the relationship between the strength of the sentiment of friendship and the professional role orientation of individuals yielded results warranting the acceptance of the extension to Hypothesis Two. A Pearson product-moment correlation of .18 and a correlation ratio of .24, both significant at the .05 level, were obtained using the total sample data. The analysis of variance of the strength of sentiment data for the total sample classified on the basis of within schools professional role orientation quartile groups revealed significant differences among the means for the group and the

Newman-Keuls comparison among the ordered means disclosed that the top quartile professional role orientation group had a mean score significantly higher than the means for the other groups. Pursuant to the discussion on the relationship between Hypothesis One and Two, the rejection of the extension to Hypothesis One suggests automatic rejection of this extension to Hypothesis Two or, if a significant relationship is found, the relationship can in part be attributed to the effects of mediating variables. An inspection of the correlates of professionalism contained in Chapter III⁶ furnished two variables that may be acting as mediating variables. These were the number of years of teaching experience in a school and the total number of years of formal training. One would suspect that the longer one maintained social contact with a group the stronger the sentiments of friendship with other long term members and the fewer the outside alternatives. The second correlate suggests that it might mediate the professional role orientation and strength of the sentiment of friendship relationship by reducing the alternatives for friendship available to the members. With the accomplishment of some degree of 'academic prestige' the individual may restrict himself to having consistent social interactions with only those individuals having a similar level of prestige. His years of formal training may have divorced him from those social groups that he belonged to before entrance into the

⁶Supra, pp. 98-103.

The first of these is the fact that the majority of the subjects in the study were male. This is a limitation of the study as it may not be representative of the general population. However, the majority of the subjects in the study were male, and this is a limitation of the study as it may not be representative of the general population.

The second of these is the fact that the majority of the subjects in the study were from the same geographical area. This is a limitation of the study as it may not be representative of the general population. However, the majority of the subjects in the study were from the same geographical area, and this is a limitation of the study as it may not be representative of the general population.

The third of these is the fact that the majority of the subjects in the study were from the same age group. This is a limitation of the study as it may not be representative of the general population. However, the majority of the subjects in the study were from the same age group, and this is a limitation of the study as it may not be representative of the general population.

The fourth of these is the fact that the majority of the subjects in the study were from the same social class. This is a limitation of the study as it may not be representative of the general population. However, the majority of the subjects in the study were from the same social class, and this is a limitation of the study as it may not be representative of the general population.

The fifth of these is the fact that the majority of the subjects in the study were from the same ethnic group. This is a limitation of the study as it may not be representative of the general population. However, the majority of the subjects in the study were from the same ethnic group, and this is a limitation of the study as it may not be representative of the general population.

The sixth of these is the fact that the majority of the subjects in the study were from the same religious group. This is a limitation of the study as it may not be representative of the general population. However, the majority of the subjects in the study were from the same religious group, and this is a limitation of the study as it may not be representative of the general population.

The seventh of these is the fact that the majority of the subjects in the study were from the same political group. This is a limitation of the study as it may not be representative of the general population. However, the majority of the subjects in the study were from the same political group, and this is a limitation of the study as it may not be representative of the general population.

The eighth of these is the fact that the majority of the subjects in the study were from the same educational group. This is a limitation of the study as it may not be representative of the general population. However, the majority of the subjects in the study were from the same educational group, and this is a limitation of the study as it may not be representative of the general population.

The ninth of these is the fact that the majority of the subjects in the study were from the same occupational group. This is a limitation of the study as it may not be representative of the general population. However, the majority of the subjects in the study were from the same occupational group, and this is a limitation of the study as it may not be representative of the general population.

The tenth of these is the fact that the majority of the subjects in the study were from the same marital status group. This is a limitation of the study as it may not be representative of the general population. However, the majority of the subjects in the study were from the same marital status group, and this is a limitation of the study as it may not be representative of the general population.

university while the less formally trained individual may have been able to sustain these over the one or two year period that his activities were restricted. The fact that these are variables associated with individuals that would be lost through the process of grouping when school data was used would explain why the hypothesized relationship was not present when school data was used but did appear with the analysis of individual data. No effort was made to determine if these two variables were operating in a mediatory role but, in the light of the theory and this discussion, the interpretation of the significant relationship between individual professional role orientation and strength of sentiments of friendship must be conditional.

Some results obtained in the testing of Hypothesis Two and its extension reinforced the relationship between the rate of social interaction and the sentiments of friendship as expressed by Homans. A correlational analysis of the relationship between the perceived rate of interaction and the strength of sentiments for schools yielded a Pearson product-moment correlation of .48, significant at the .05 level. Using the total sample of individuals, a correlation of .18, significant at the .05 level, was obtained. Therefore, the basic social behavior relationship upon which professional role orientation was superimposed was discovered but the hypothesized juncture of professional role orientation to it was only conditionally revealed in the strength of sentiment data for individuals and not at all in the school data.

Hypothesis Number Three

The third hypothesis stated, "The degree of consensus within teacher groups on the professional role orientation will be positively related to their average professional role orientation."⁷

In order to test this hypothesis the variances of the school Professional Role Orientation Scale scores were ranked, the smallest variance having a rank of one, as were the school means on the professionalism scale, and a Spearman's coefficient of rank correlation was obtained. A Kruskal-Wallis one-way analysis of variance⁸ was performed using the rankings of the variances classified on the basis of school professional role orientation quartile membership. It was assumed that the differences among the variances of the schools at the various mean levels was a result of the effects of the social structure on the professional values held by the individuals and not a condition inherent in the Professional Role Orientation Scale.

The Spearman rank correlation coefficient of .03 indicates that there was not a significant relationship at the .05 level between the ranks of the size of school variances and the ranks of the school means on the Professional Role Orientation Scale. Table XX contains the results of the Kruskal-Wallis analysis of variance. The H_0 of 3.34

⁷

Supra, p. 83.

⁸S. Siegel, Nonparametric Statistics for the Behavioral Sciences, pp. 184-193.

The first question is: "What is the purpose of the study?"

There are two main purposes: to understand the process and to

identify the factors that influence the process.

In order to do this, we need to understand the process of the

process. This is done by looking at the process and

identifying the factors that influence the process.

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was less than the critical value of 7.82, therefore the differences among the variances represent chance variations among samples drawn from the same population. These results imply that the degree of consensus within teacher groups on the professional role orientation was not significantly related to their average professional role orientation.

TABLE XX

KRUSKAL-WALLIS ANALYSIS OF VARIANCE OF THE SIZE OF SCHOOL
PROFESSIONAL ROLE ORIENTATION SCALE SCORE VARIANCES
CLASSIFIED ON THE BASIS OF QUARTILE GROUPS
AMONG SCHOOLS ON THE PROFESSIONAL
ROLE ORIENTATION SCALE

Variable	Sums of Ranks for Groups				DF	H_0	$H_{.05}$
	A	B	C	D			
Size of Variance	100.00	54.00	95.50	75.50	3	3.34	7.82

Discussion. The results of the statistical analysis of the data pertaining to Hypothesis Three support the rejection of this hypothesis. This hypothesis had been developed on the premise that if professional role orientation was a social value then the groups would exert pressure on individuals in order to attempt to get them to accept this role and the degree of consensus would be dependent upon the extent that the teacher group held these values. The social pressures would take the form of reduced interaction with and lower

emission of social approval to those individuals expressing nonconsensus. Tables XV and XVI, page 175ff, indicated that top professional groups in schools had higher rates of perceived and attributed rates of interaction than the bottom professional groups but the differences were not significant at the .05 level. Therefore, the teacher groups did not exercise to any appreciable extent this coercive power to obtain consensus on the values contained in a professional role orientation. The results of the analysis of professional role orientation and social esteem data⁹ indicated that there was little or no relationship between these two variables therefore the power to vary the amounts of social approval was not significantly utilized by teacher groups to obtain consensus on the values associated with a professional role orientation. These results would indicate that the premises underlying Hypothesis Three were not met and the hypothesis itself was rejected.

Hypothesis Number Four

Hypothesis Four stated that "The values, attitudes and opinions contained in a professional role orientation will be integrated into the norms of teacher groups."¹⁰

This hypothesis was tested by an investigation of two propositions: (a) the higher the cohesiveness of a group the smaller the group variance on the professionalism scale, and (b) the lower the score on the professionalism scale the lower the esteem granted to an

⁹ Infra, pp. 191-193.

¹⁰ Supra, p. 83.

individual by the group. With reference to the first proposition a Spearman rank correlation was computed between the ranks of teacher groups on their level of cohesiveness and on the size of their group variance on the professionalism scale -- a rank of one was given to the smallest variance. In order to test the second proposition Spearman rank correlations were calculated to measure the relationship between the rankings on the Professional Role Orientation scale and on the social esteem structure. Kruskal-Wallis analyses of variance were performed using the social esteem ranks within each school classified on the basis of within school professional quartile groups.

A Spearman rank correlation of $-.13$ between the ranks of teacher groups on cohesiveness and the size of their variance on the professionalism scale denote that the relationship between these two variables was not significant at the $.05$ level. Festinger et al. have provided the conclusion to be reached from this result:

. . . if no relation exists between cohesiveness and homogeneity of the pattern, the group does not use its power to induce the members to conform and we may take it as indicative of the absence of group standards.¹¹

Table XXI contains the Spearman rank correlations between the ranks on the professionalism scale and the ranks on the social esteem structures for each school. Schools six and nine were found to have significantly negative correlations between the two variables when a

¹¹L. Festinger, Stanley Schachter and Kurt Back, Social Pressures in Informal Groups, p. 90.

TABLE XXI

SPEARMAN RANK CORRELATIONS BETWEEN PROFESSIONAL ROLE
ORIENTATION AND SOCIAL ESTEEM RANKS FOR
INDIVIDUALS IN EACH SCHOOL

	School	N	ρ^*
A	3	13	-.54 ^a
	4	20	-.03
	5	13	.21
	13	12	-.29
	14	19	-.30
	21	36	-.07
B	10	17	-.32
	16	30	-.18
	17	33	-.15
	18	29	-.10
	19	22	-.14
	27	19	.25
C	1	17	.23
	6	17	-.54 ^{**a}
	7	17	-.12
	9	15	-.54 ^{**a}
	12	18	-.09
	25	29	.05
	31	15	.10
D	15	31	-.13
	22	29	-.20
	28	24	.24
	29	14	-.24
	30	18	-.40 ^a
	33	22	.28

*Significant at the .05 level -- one-tailed test

**Significant at the .05 level -- two-tailed test

^aSignificant at the .05 level -- Kaiser directional two-sided test

two-tailed test of significance was used. When a Kaiser directional two-sided test of significance¹² was used four schools were found to yield significantly negative correlations. Eighteen of the twenty-five schools yielded negative correlations. These results indicate that if any relationship existed between professionalism and social esteem it was a negative one. Table XXII shows the results of the Kruskal-Wallis analysis of variance of social esteem ranks among the within school professional role orientation quartile groups. In those schools where there were less than six individuals per cell the $\chi^2_{.05}$ value equivalent to the H value ranges from a probability of .05 to .15¹³ but since in only one case were significant differences among the means found one can assume that the social esteem in which individuals were held was independent of their professional role orientation.

Discussion. Hypothesis Four was indirectly tested in that if two propositions related to the hypothesis were confirmed by the analysis then the hypothesis itself was assumed to be valid. The first proposition relating consensus on professionalism to cohesiveness was derived from the following relationship enunciated by Festinger, et al.:

To be able to create and maintain group standards,
a group must have power over its members. This power,

12

H. F. Kaiser, "Directional Statistical Decisions," Psychological Review, 67, pp. 160-167.

TABLE XXII

KRUSKAL-WALLIS ANALYSIS OF VARIANCE OF SOCIAL ESTEEM RANKS
CLASSIFIED ON THE BASIS OF WITHIN SCHOOL PROFESSIONAL
ROLE ORIENTATION QUARTILE GROUPS

School	N	Sums of Ranks for Groups				H ₀
		A	B	C	D	
A	3	29.00	25.00	18.00	19.00	3.533
	4	33.00	76.00	68.00	33.00	8.901*
	5	22.00	13.00	21.00	35.00	2.236
	13	24.00	19.00	17.00	18.00	0.744
	14	54.00	54.00	55.00	27.00	3.125
	21	159.00	189.00	162.00	156.00	1.542
B	10	41.00	48.00	15.00	49.00	3.703
	16	129.00	109.00	132.00	95.00	2.237
	17	146.00	117.50	143.00	154.50	2.399
	18	108.00	116.00	92.00	119.00	0.591
	19	48.00	90.00	68.00	47.00	4.618
	27	32.00	52.00	48.00	58.00	3.613
C	1	34.00	31.00	36.00	52.00	0.669
	6	50.00	44.00	31.50	27.50	5.213
	7	32.00	50.00	40.00	31.00	0.842
	9	46.00	25.00	34.00	15.00	4.462
	12	28.00	66.00	44.00	33.00	3.599
	25	97.00	119.00	99.00	120.00	0.642
	31	26.00	38.00	24.00	32.00	0.900
D	15	117.00	176.00	93.00	110.00	2.535
	22	125.00	72.00	133.00	105.00	2.212
	28	69.00	79.50	45.00	106.50	6.523
	29	33.00	23.00	22.00	27.00	0.267
	30	42.00	68.00	21.00	40.00	6.044
	33	35.00	86.00	43.00	67.00	5.319

*There were significant differences among the means at the .05 level.

the ability to induce forces on its members, stems from its cohesiveness. If the group uses this power to make the members think and act in the same way, that is, if there are group standards, the homogeneity of the attitude and activity patterns should be related to the cohesiveness of the group. Correspondingly, if no relation exists between cohesiveness and homogeneity of the pattern, the group does not use its power to induce the members to conform and we may take it as indicative of the absence of group standards.¹⁴

The finding that there was no significant relationship between the cohesiveness of a school and the size of the variance on the professionalism scale has led the writer to conclude that there was an 'absence of group standards' with respect to professional role orientation among the schools used in this study.

The second proposition was drawn from Homan's description of a close relationship between normative behavior and esteem:

Evaluation is a sentiment released or stimulated by a comparison of a man's activities with those of other members of his group in accordance with some standard, the standard being provided by the norms and assumptions of the group. . . . For a man to rank high in his group, it is not enough that he should evaluate himself highly; his group must also accept his evaluation, and the norms of the group provide the only possible basis for agreement. . . . This leads to . . . the fundamental hypothesis that the higher the rank of a person within a group, the more nearly his activities conform to the norms of the group.¹⁵

Assuming that the values contained in a professional role orientation

¹⁴ Festinger et al., loc. cit.

¹⁵ G. C. Homans, The Human Group, pp. 140-141.

the following is a list of the names of the persons who have been appointed to the various committees of the Board of Directors of the American Telephone and Telegraph Company, for the year ending December 31, 1911.

The Board of Directors of the American Telephone and Telegraph Company, for the year ending December 31, 1911, has appointed the following committees:

Committee on Finance: Mr. J. C. Smith, Chairman; Mr. A. B. Jones, Secretary; Mr. C. D. Brown, Treasurer; Mr. E. F. Green, Auditor.

The Committee on Finance has the honor to acknowledge the receipt of the report of the Auditor, Mr. E. F. Green, dated December 31, 1911.

The Board of Directors of the American Telephone and Telegraph Company, for the year ending December 31, 1911, has also appointed the following committees:

Committee on Operations: Mr. J. C. Smith, Chairman; Mr. A. B. Jones, Secretary; Mr. C. D. Brown, Treasurer; Mr. E. F. Green, Auditor.

Committee on Legal Affairs: Mr. J. C. Smith, Chairman; Mr. A. B. Jones, Secretary; Mr. C. D. Brown, Treasurer; Mr. E. F. Green, Auditor.

Committee on General Affairs: Mr. J. C. Smith, Chairman; Mr. A. B. Jones, Secretary; Mr. C. D. Brown, Treasurer; Mr. E. F. Green, Auditor.

The Board of Directors of the American Telephone and Telegraph Company, for the year ending December 31, 1911, has also appointed the following committees:

Committee on Public Affairs: Mr. J. C. Smith, Chairman; Mr. A. B. Jones, Secretary; Mr. C. D. Brown, Treasurer; Mr. E. F. Green, Auditor.

Committee on Technical Affairs: Mr. J. C. Smith, Chairman; Mr. A. B. Jones, Secretary; Mr. C. D. Brown, Treasurer; Mr. E. F. Green, Auditor.

manifest themselves in the form of certain identifiable activities, then, if there is no significant relationship between the extent that a person holds these values and his social esteem rank within the group, these values did not play an important role in the norms of the group. The results of the investigation of the data pertaining to these two variables in this study indicated that there was no significant relationship between a person's professional role orientation and his social esteem rank. Therefore, the values associated with a professional role orientation were not integrated into the norms of the teacher groups used in this study.

Since both propositions were rejected the writer has concluded that Hypothesis Four was rejected and has accepted the alternate hypothesis that the values, attitudes and opinions contained in a professional role orientation were not integrated into the norms of the sample of teacher groups investigated in this study.

Hypothesis Number Five

This hypothesis stated, "The level of cohesiveness within a teacher group will be positively related to the group's average professional role orientation."¹⁶

In the testing of this hypothesis the school mean scores on the Satisfaction Questionnaire and the Professional Role Orientation Scale were used. A Pearson product-moment correlation was computed

between these variables in order to determine if there was a significant relationship and an one-way analysis of variance of the satisfaction scores classified on the basis of among school quartile groups on the Professional Role Orientation Scale was performed in order to determine if there were significant differences among the group means. A Newman-Keuls comparison between ordered means was executed.

The correlational analysis yielded a Pearson product-moment correlation between the two variables of .06 which was not significant at the .05 level. Table XXIII contains the results of the analysis of variance and the Newman-Keuls comparison. The F value of 1.99 with a probability of .11 indicates that the differences among the means for the groups were not significant. Therefore, the groups could be considered samples drawn from the same population. The Newman-Keuls comparison revealed no significant differences between pairs of ordered means.

Discussion. The results of the statistical analyses demonstrated that there was no significant relationship between the level of cohesiveness within a teacher group and the group's average professional role orientation. Therefore, Hypothesis Five was rejected for this sample of schools.

Two of the basic relationships upon which this hypothesis was built were the correlation between the rate of social interaction in

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TABLE XXIII

ANALYSIS OF VARIANCE OF SCHOOL COHESIVENESS SCORES CLASSIFIED
ON THE BASIS OF AMONG SCHOOL QUARTILE GROUPS ON THE
PROFESSIONAL ROLE ORIENTATION AND A NEWMAN-
KEULS COMPARISON BETWEEN ORDERED MEANS

Source	Mean Squares	DF	F	P
Between Groups	34.41	3	1.99	.11
Within Groups	17.32	525		

Groups	B	C	A	D
Means	21.35	21.34	20.74	20.32
B	21.35	00*	00	00
C	21.34	--	00	00
A	20.74		--	00
D	20.32			--

* The difference between the means was not significant at the .05 level.

a group and its cohesiveness and the level of friendship and cohesiveness. The Pearson product-moment correlations of .58 and .50 between the cohesiveness of a school and its rates of perceived and attributed rates of social interaction were significant at the .01 level. These results substantiate the first basic relationship. The correlation of .46 between the strength of the sentiments of friendship in a school and the school's cohesiveness was significant at the .01 level. Therefore, the second basic relationship was also found to exist within these schools. It follows that the fault in the theoretical development of this hypothesis may have been in the relating of the values of professional role orientation to these basic relationships. The writer's characterization of the more professional groups as having "a greater amount of interaction, a higher level of friendship and a narrower variation in their attitudes and a greater consensus on their norms,"¹⁷ all of these being factors contributing to cohesiveness, was rejected by the analysis of the data in this study. The writer had also conjectured that the professional's orientation to colleagues would also promote cohesiveness. The Pearson product-moment correlation of .02 between the colleague orientation of a person and his satisfaction was not significant at the .05 level. Therefore, this premise was not substantiated. Once again, Homan's basic theory was substantiated but the juncture of the values associ-

¹⁷Supra, p. 62.

ated with a professional role orientation was found inappropriate for the schools investigated by this study.

Hypothesis Number Six

Hypothesis Six stated, "There will be a positive relationship between the professional role orientation of the teachers and the technical esteem in which they were held by the teacher group."¹⁸

The ranks on the Professional Role Orientation Scale and the technical esteem ranks for individuals within each school were used to investigate the hypothesized relationship. Spearman rank correlations were obtained in order to determine if a significant relationship between the two variables was present in this sample of schools. Kruskal-Wallis analyses of variance using the technical esteem ranks classified on the basis of professional role orientation were computed in order to determine if significant differences existed among the groups.

The results of the correlational analysis are contained in Table XXIV. Since the number of significant correlations did not exceed that expected by chance and were equally distributed between significantly positive and significantly negative it has been assumed that for the population of individuals there was no significant relationship between their professional role orientation and technical

18

Supra, p. 83.

the following results were obtained in the experiments described above:

RESULTS AND DISCUSSION

The first series of experiments was carried out in the following manner:

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TABLE XXIV

SPEARMAN RANK CORRELATIONS BETWEEN THE TECHNICAL
ESTEEM AND PROFESSIONAL ROLE ORIENTATION OF
INDIVIDUALS WITHIN EACH SCHOOL

School	N	r
A	3	-.62**
	4	.07
	5	.26
	13	.06
	14	-.26
	21	.00
B	10	-.40
	16	-.08
	17	.15
	18	.20
	19	.13
	27	.32
C	1	.06
	6	-.33
	7	-.14
	9	-.43
	12	-.10
	25	.34*
	31	.19
D	15	-.14
	22	-.14
	28	.13
	29	-.23
	30	.29
	33	.23

* Significant at the .05 level -- one-tailed test

** Significant at the .05 level -- two-tailed test

esteem. Supporting this conclusion, the analysis of variance results shown in Table XXV indicated that in no school were there significant differences in technical esteem among the four professional role orientation groups.

Discussion. The statistical analysis of the relationship put forward in Hypothesis Six clearly indicate that the hypothesis that there was a positive relationship between the professional role orientation of the teachers and the technical esteem in which they were held by the teacher group should be rejected. No consistently significant relationship was found.

The basic argument that the writer had developed in order to extend this hypothesis was that since other studies had shown that the more professional teachers generally had more formal years of training, experience at teaching and on staff then they were better able to offer rewards in technical areas and in this manner contributed to the accomplishment of individual and group tasks in return for which they received technical esteem. Perhaps the individual's isolated working conditions and demand for autonomy results in little exchange of information and advice among teachers and little recognition of tasks that could be considered the domain of the group. Another possibility would be that teachers as a group place little value on experience and formal training for purposes other than salary negotiations.

Two relationships involving the attainment of esteem, as

TABLE XXV

KRUSKAL-WALLIS ANALYSIS OF VARIANCE OF TECHNICAL ESTEEM RANKS
CLASSIFIED ON THE BASIS OF WITHIN SCHOOL QUARTILE GROUPS
ON THE PROFESSIONAL ROLE ORIENTATION SCALE

School	N	Sums of Ranks for Groups				H _o	
		A	B	C	D		
A	3	13	28.0	28.0	19.0	16.0	4.08
	4	20	37.0	68.0	64.0	41.0	4.26
	5	13	24.0	9.0	22.0	36.0	4.44
	13	12	23.5	14.5	11.0	29.0	5.49
	14	19	53.0	57.0	42.0	38.0	4.08
	21	36	142.0	204.0	148.0	172.0	2.16
B	10	17	43.0	50.0	10.0	50.0	6.32
	16	30	113.0	115.0	135.0	102.0	1.09
	17	33	115.0	118.0	137.0	191.0	2.69
	18	29	78.0	114.0	106.0	137.0	2.10
	19	22	42.0	80.0	68.0	63.0	2.28
	27	19	30.0	48.0	57.0	55.0	3.52
C	1	17	28.0	46.0	36.0	43.0	1.66
	6	17	40.0	43.0	41.0	29.0	2.89
	7	17	29.0	61.0	37.0	26.0	1.36
	9	15	44.0	24.0	35.0	17.0	3.54
	12	18	37.0	53.0	44.0	37.0	0.32
	25	29	70.0	130.5	93.5	141.0	5.43
	31	15	27.0	36.00	17.0	40.0	2.14
D	15	31	111.0	174.0	106.0	105.0	2.08
	22	29	127.0	75.0	111.0	122.0	1.62
	28	24	74.0	86.0	41.0	99.0	6.18
	29	14	39.0	19.0	12.0	35.0	3.92
	30	18	25.5	56.0	25.5	64.0	5.21
	33	22	39.0	86.5	42.0	63.5	4.41

*An asterisk indicates that there were differences among the means significant at the .05 level.

MEAN WEIGHT, LENGTH, AND AGE OF FISH IN THE LAKE SUPERIOR
 FISHING ZONE, 1964-1965, AND IN THE LAKE SUPERIOR
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 FISHING ZONE, 1968-1969

Age	Lake Superior Fishing Zone, 1964-1965					Total
	1	2	3	4	5	
10.0	0.00	0.00	0.00	0.00	0.00	0.00
9.0	0.00	0.00	0.00	0.00	0.00	0.00
8.0	0.00	0.00	0.00	0.00	0.00	0.00
7.0	0.00	0.00	0.00	0.00	0.00	0.00
6.0	0.00	0.00	0.00	0.00	0.00	0.00
5.0	0.00	0.00	0.00	0.00	0.00	0.00
4.0	0.00	0.00	0.00	0.00	0.00	0.00
3.0	0.00	0.00	0.00	0.00	0.00	0.00
2.0	0.00	0.00	0.00	0.00	0.00	0.00
1.0	0.00	0.00	0.00	0.00	0.00	0.00
0.0	0.00	0.00	0.00	0.00	0.00	0.00
10.0	0.00	0.00	0.00	0.00	0.00	0.00
9.0	0.00	0.00	0.00	0.00	0.00	0.00
8.0	0.00	0.00	0.00	0.00	0.00	0.00
7.0	0.00	0.00	0.00	0.00	0.00	0.00
6.0	0.00	0.00	0.00	0.00	0.00	0.00
5.0	0.00	0.00	0.00	0.00	0.00	0.00
4.0	0.00	0.00	0.00	0.00	0.00	0.00
3.0	0.00	0.00	0.00	0.00	0.00	0.00
2.0	0.00	0.00	0.00	0.00	0.00	0.00
1.0	0.00	0.00	0.00	0.00	0.00	0.00
0.0	0.00	0.00	0.00	0.00	0.00	0.00
10.0	0.00	0.00	0.00	0.00	0.00	0.00
9.0	0.00	0.00	0.00	0.00	0.00	0.00
8.0	0.00	0.00	0.00	0.00	0.00	0.00
7.0	0.00	0.00	0.00	0.00	0.00	0.00
6.0	0.00	0.00	0.00	0.00	0.00	0.00
5.0	0.00	0.00	0.00	0.00	0.00	0.00
4.0	0.00	0.00	0.00	0.00	0.00	0.00
3.0	0.00	0.00	0.00	0.00	0.00	0.00
2.0	0.00	0.00	0.00	0.00	0.00	0.00
1.0	0.00	0.00	0.00	0.00	0.00	0.00
0.0	0.00	0.00	0.00	0.00	0.00	0.00

NOTE: The above table shows the mean weight, length, and age of fish in the Lake Superior fishing zone, 1964-1965, and in the Lake Superior fishing zone, 1966-1967, and in the Lake Superior fishing zone, 1968-1969.

enunciated by Homans, other than that of granting 'values', upon which Hypothesis Six was developed were (a) the closer an individual meets the norms of the group the higher his esteem, and (b) since esteem was a sentiment the strength of this sentiment was dependent upon the nature and rate of the interactions among the individuals. The analysis of the data to determine if the values associated with a professional role orientation were integrated into the norms of the group indicated that the first relationship did not evolve around these values. Table XXVI contains the results of the correlational analysis between technical esteem and perceived and attributed rates of social interaction. The number of significant correlations exceeded that expected by chance. The higher number of significant correlations between attributed interaction and technical esteem than between perceived interaction and technical esteem indicate that the 'self-flattery' bias inherent in the measurement of attributed interaction did in fact influence these scores in this study. These results provide evidence to support Homans' proposition on the relationship between rate of interaction and esteem.

Hypothesis Number Seven

This hypothesis stated, "There will be a positive relationship between the professional role orientation of the teachers and the social esteem in which they are held by the teacher group."¹⁹

¹⁹Supra, p. 84.

TABLE XXVI

SPEARMAN RANK CORRELATIONS BETWEEN TECHNICAL ESTEEM AND
PERCEIVED AND ATTRIBUTED RATE OF INTERACTION RANKS
FOR INDIVIDUALS IN EACH SCHOOL

School		N	ρ Perceived Interaction	ρ Attributed Interaction
A	3	13	-.04	.28
	4	20	.16	.58*
	5	13	.14	.31
	13	12	.34	-.19
	14	19	.12	.27
	21	36	.20	.44*
B	10	17	.14	.53*
	16	30	.29	.56*
	17	33	.33*	.37*
	18	29	.21	.61*
	19	22	.55	.65*
	27	19	.76*	.74*
C	1	17	.07	.05
	6	17	.72*	.79*
	7	17	.50*	.55*
	9	15	.42	.68*
	12	18	.48*	.63*
	25	29	.58*	.65*
	31	15	.18	.64*
D	15	31	.20	.64*
	22	29	.35*	.45*
	28	24	.55*	.51*
	29	14	.56*	.26
	30	18	.00	.59*
	33	22	.59*	.72*

* Significant at the .05 level

Social esteem and professional role orientation ranks for individuals in each school were used to investigate the hypothesized relationship between these two variables. Spearman rank correlations were obtained and Kruskal-Wallis analyses of variance were computed.

The results of these analyses are contained in Tables XXI and XXII, pages 192 and 194, respectively. Table XXI shows that there was a negative correlation between social esteem in eighteen of the twenty-five schools, two of which were significant at the .05 level when a two-tailed test of significance was used and four of which were significantly negative when a Kaiser directional two-sided test was employed. If no relationship existed between the variables one would expect, due to sampling error, twelve schools with negative correlations, 1.25 schools with a significant and positive correlation with a one-tailed test of significance, .63 schools with a significant and negative correlation with a two-tailed test, and 1.25 schools with significantly negative correlations with a Kaiser directional two-sided test. The results obtained cannot be explained entirely by chance, therefore if any relationship existed between the social esteem and professional role orientation of individuals within the schools utilized in this study it was a negative one. The Kruskal-Wallis analysis of variance found only one school with significant differences among the ranks granted to individuals classified on the basis of within school professional role orientation quartile groups.

The first section of the document is devoted to a general
 introduction of the subject and to a brief review of the
 literature. The second section is devoted to a detailed
 description of the experimental apparatus and the
 results of the measurements. The third section is devoted
 to a discussion of the results and to a comparison with
 the theoretical predictions. The fourth section is devoted
 to a summary of the results and to a few concluding
 remarks. The fifth section is devoted to a list of
 references. The sixth section is devoted to an
 appendix containing the raw data and the
 calculations. The seventh section is devoted to a
 list of symbols and abbreviations. The eighth section
 is devoted to a list of figures. The ninth section
 is devoted to a list of tables. The tenth section
 is devoted to a list of footnotes. The eleventh
 section is devoted to a list of acknowledgments. The
 twelfth section is devoted to a list of addresses. The
 thirteenth section is devoted to a list of dates. The
 fourteenth section is devoted to a list of initials. The
 fifteenth section is devoted to a list of page numbers.

This was less than the number expected by chance. In the one significant case, the top and bottom quartile group received significantly higher social esteem ranks than did the two middle quartile groups. Therefore, even this case did not correspond to the hypothesized model. An inspection of the sums of ranks for groups within schools showed that in five cases group A was granted the most social esteem, in four cases group B received the most social esteem, in nine cases group C did and in eight cases group D was the most highly esteemed. If there was a trend present in the ordering of the means it was in a direction opposite to that hypothesized.

Discussion. The results of the statistical analysis of the relationship between professional role orientation and social esteem indicate the rejection of the hypothesis that there was a "positive relationship between the professional role orientation of the teachers and the social esteem in which they are held by the teacher group." The group values upon which social esteem was adjudged were not those associated with a professional role orientation.

The basic social structure relationship between the rate of social interaction and esteem was also confirmed in the investigation of Hypothesis Seven. Table XXVII contains the Spearman rank correlations between social esteem and perceived and attributed social interaction ranks for each school. Eleven and eighteen of the Spearman rank correlations between social esteem and perceived and attributed social interaction ranks, respectively, were significant at the .05 level:

TABLE XXVII

SPEARMAN RANK CORRELATIONS BETWEEN SOCIAL ESTEEM AND
PERCEIVED AND ATTRIBUTED RATE OF INTERACTION
RANKS FOR INDIVIDUALS IN EACH SCHOOL

School	N	ρ Perceived Interaction	ρ Attributed Interaction
A	3	.14	.43
	4	-.04	.35
	5	.36	.52*
	13	.41	.44
	14	.03	.01
	21	.28*	.53*
B	10	.14	.68*
	16	.36*	.68*
	17	.34*	.49*
	18	.26	.56*
	19	.60*	.60*
	27	.64*	.64*
C	1	.24	.34
	6	.12	.20
	7	.44*	.47*
	9	.35	.69*
	12	.82*	.72*
	25	.53*	.70*
	31	.16	.58*
D	15	.25	.65*
	22	.58*	.48*
	28	.72*	.74*
	29	.57*	.05
	30	.20	.65*
	33	.50	.67*

*Significant at the .05 level -- one-tailed test

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NAME	ADDRESS	PHONE	DATE	TIME
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2. J. J. J.	2. J. J. J.	2. J. J. J.	2. J. J. J.	2. J. J. J.
3. J. J. J.	3. J. J. J.	3. J. J. J.	3. J. J. J.	3. J. J. J.
4. J. J. J.	4. J. J. J.	4. J. J. J.	4. J. J. J.	4. J. J. J.
5. J. J. J.	5. J. J. J.	5. J. J. J.	5. J. J. J.	5. J. J. J.
6. J. J. J.	6. J. J. J.	6. J. J. J.	6. J. J. J.	6. J. J. J.
7. J. J. J.	7. J. J. J.	7. J. J. J.	7. J. J. J.	7. J. J. J.
8. J. J. J.	8. J. J. J.	8. J. J. J.	8. J. J. J.	8. J. J. J.
9. J. J. J.	9. J. J. J.	9. J. J. J.	9. J. J. J.	9. J. J. J.
10. J. J. J.	10. J. J. J.	10. J. J. J.	10. J. J. J.	10. J. J. J.

Not included in the list of names of the

this exceeds the number expected by chance. There was a significant and positive relationship between the perceived and attributed rate of social interaction and an individual's social esteem.

Hypothesis Number Eight

Hypothesis Eight stated, "The relationship between professional role orientation and technical and social esteem will be closer in teacher groups having a higher average professional role orientation."²⁰

In order to investigate these relationships, the Spearman rank correlations between professional role orientation and social esteem and between professional role orientation and technical esteem within schools were ranked among the schools with the rank of one being assigned to the schools with the highest correlations. Spearman rank correlations were obtained between these rankings and the ranking of schools according to their mean professional role orientation. Kruskal-Wallis one-way analyses of variance were computed using the ranks according to the degree of correspondence between professional role orientation and the esteem structures classified on the basis of among schools quartile groups on the Professional Role Orientation Scale.

The Spearman rank correlations of .00 and -.08 between the degree of correspondence between professional role orientation, technical esteem, and the professionalism of the school and between

20

Supra, p. 84.

professional role orientation, social esteem, and the professionalism of the school, respectively, were not significant at the .05 level. The Kruskal-Wallis analysis of variance procedure using the degree of correspondence data on technical esteem yielded an H value of 1.33 from the sums of ranks of 66.0, 89.0, 101.0 and 69.0 for groups A, B, C and D, respectively. This value was less than the critical value of 7.82 for three degrees of freedom, therefore the differences among the groups were not significant and they could be considered samples drawn from the same population. For the degree of correspondence data on social esteem, an H value of 0.76, obtained from the sums of the ranks for the groups of 73.0, 77.5, 104.5 and 70.0, respectively, was less than the 7.82 critical value. These results indicate that there was no significant relationship between the professionalism of the schools and the degree of correspondence between professionalism and technical and social esteem.

Discussion. The results clearly dictate the rejection of Hypothesis Eight; the relationship between professional role orientation and technical and social esteem had no connection with the average professional role orientation of the school. Taking into account the conclusions reached for Hypotheses Six, Seven and Eight, the results of the investigation of the relationships between technical esteem, social esteem and professionalism indicate that they were not significantly positive within schools nor among schools with the possible exception of social esteem which may be significantly and negatively

The first of these is the fact that the distribution of the data is not uniform. The data is concentrated in the lower part of the range, with a sharp increase in frequency as the value of the variable increases. This is a characteristic feature of many natural phenomena, and it is one of the reasons why the normal distribution is not always a good fit for the data. The second feature is the fact that the data is skewed to the right. This means that the tail of the distribution extends further to the right than to the left. This is also a common feature of many natural phenomena, and it is another reason why the normal distribution is not always a good fit for the data. The third feature is the fact that the data is not normally distributed. This means that the data does not follow the normal distribution curve. This is a common feature of many natural phenomena, and it is another reason why the normal distribution is not always a good fit for the data. The fourth feature is the fact that the data is not normally distributed. This means that the data does not follow the normal distribution curve. This is a common feature of many natural phenomena, and it is another reason why the normal distribution is not always a good fit for the data. The fifth feature is the fact that the data is not normally distributed. This means that the data does not follow the normal distribution curve. This is a common feature of many natural phenomena, and it is another reason why the normal distribution is not always a good fit for the data.

The sixth feature is the fact that the data is not normally distributed. This means that the data does not follow the normal distribution curve. This is a common feature of many natural phenomena, and it is another reason why the normal distribution is not always a good fit for the data. The seventh feature is the fact that the data is not normally distributed. This means that the data does not follow the normal distribution curve. This is a common feature of many natural phenomena, and it is another reason why the normal distribution is not always a good fit for the data. The eighth feature is the fact that the data is not normally distributed. This means that the data does not follow the normal distribution curve. This is a common feature of many natural phenomena, and it is another reason why the normal distribution is not always a good fit for the data. The ninth feature is the fact that the data is not normally distributed. This means that the data does not follow the normal distribution curve. This is a common feature of many natural phenomena, and it is another reason why the normal distribution is not always a good fit for the data. The tenth feature is the fact that the data is not normally distributed. This means that the data does not follow the normal distribution curve. This is a common feature of many natural phenomena, and it is another reason why the normal distribution is not always a good fit for the data.

correlated with the individual's professional role orientation.

Hypothesis Number Nine

This hypothesis stated, "There will be a positive relationship between the rankings according to technical and social esteem and this relationship will be closer in the teacher groups having a higher average professional role orientation."²¹

In order to investigate this relationship the Spearman rank correlations between technical and social esteem ranks within schools, contained in Table XXVIII, were ranked among the schools with the rank of one being assigned to the school with the highest correlation. A Spearman rank correlation was obtained between this ranking and the ranking of schools according to their mean professional role orientation scores. A Kruskal-Wallis one-way analysis of variance was computed using the ranks according to the relationship between the two esteem structures within schools classified on the basis of among schools quartile groups on the Professional Role Orientation Scale.

The Spearman rank correlation of .09 between the two variables was not significant at the .05 level. The Kruskal-Wallis analysis of variance yielded an H value of 3.54 from the sums of 70.0, 61.0, 121.0 and 73.0 for groups A, B, C and D, respectively. Since this value was less than the critical value of 7.82, the differences among the group were not significant. The groups could be considered samples

²¹Supra, p. 84.

TABLE XXVIII

SPEARMAN RANK CORRELATIONS BETWEEN TECHNICAL
AND SOCIAL ESTEEM RANK OF INDIVIDUALS
WITHIN EACH SCHOOL

School	N	ρ
A	3	.86*
	4	.79*
	5	.90*
	13	.49
	14	.70*
	21	.84*
B	10	.74*
	16	.89*
	17	.68*
	18	.81*
	19	.66*
	27	.90
C	1	.70*
	6	.41*
	7	.82*
	9	.82*
	12	.76*
	25	.72
	31	.88*
D	15	.87*
	22	.68*
	28	.73*
	29	.61*
	30	.56*
	33	.87*

* Significant at the .05 level

REPORT ON THE PROGRESS OF THE
RESEARCH DURING THE YEAR
1900

Item	Amount	Total
Salaries	1000.00	1000.00
Travel	250.00	250.00
Stationery	100.00	100.00
Books	50.00	50.00
Repairs	20.00	20.00
Other	10.00	10.00
Total	1430.00	1430.00

drawn from the same population. These results justify the rejection of the hypothesized relationship.

Discussion. The results of the statistical analysis showed that the hypothesized relationship was not prevalent in this group of schools. Therefore the conclusion must be reached that the relationship between rankings according to technical and social esteem was not closer in the teacher groups having a higher average professional role orientation in this sample of schools.

The results in Table XXVIII, page 212, indicate that there was a high degree of correspondence between the technical and social esteem structures in this sample of twenty-five schools. The writer has reason to believe that these correlations are spuriously high. In the School Social Organization Questionnaire the technical and social esteem items were placed on the same page, when recording the data contained in these items the writer noted the heavy reliance of teachers on their response to the work group choices when ranking their social group choices. Frequently the teachers would revise their ranking of the first five to ten individuals and the five least preferred teachers, then they would directly copy from their previous technical esteem responses the individuals falling in between. This suggests that the teachers were able to readily rank the extremes but were irresolute with respect to ranking the members of staff about whom they had neutral feelings. If we can assume that the individuals

falling in the middle range of ranks were not randomly assigned but were discriminated on some consistent basis, then the procedure used in this study was appropriate. In order to test this the writer obtained a Kendall's coefficient of concordance²² among the teachers in school twenty-seven in their ranking of those individuals falling below the rank of five and above the rank of eighteen on the social esteem structure. The actual ranks assigned by each teacher were used. Although the assumption underlying Kendall's W that all individuals were ranked from one to N-1 was not met, a W value of .07 with a χ^2 equivalent of 27.44 with 13 degrees of freedom, exceeding the $\chi^2_{.05}$ of 22.36, was obtained. This and the test-retest reliability coefficient of .74 indicates that the ranking of these 'neutral' individuals was not random, therefore the ranking of all individuals within a school had some validity.

The significant correlations between technical and social esteem demonstrate that teacher groups used much the same values in determining the amount of social esteem and technical esteem which each individual was to be granted. Another explanation may be that teachers desired and were able to offer very few rewards to each other in task areas and were rarely able to assess the performance of other teachers due to their physical isolation in task performance. Therefore, the technical esteem structure may have been, in fact, an

²² Siegel, op. cit., pp. 229-238.

extension of the social esteem structure with slight modifications.

To support these contentions, if we consider both esteem structures as estimates of the 'true' structure, then using the formula

$\sqrt{(r_1)(r_2)} = r_3$ ²³, where $r_1 = .78$ is the reliability coefficient for the technical esteem item and $r_2 = .74$ is the reliability coefficient for the social esteem item, then the theoretical maximum value for the true correlation between the two estimates is $r_3 = .76$. Therefore, for this sample the responses on the technical esteem and social esteem items may be considered estimates of a singular esteem structure. This conclusion has assumed that the test-retest reliability coefficient taken over a month interval was not significantly different than a coefficient of equivalence where the two items were considered to be determining the same structure.²⁴ The writer feels justified in making this assumption because the Spearman rank correlation between the technical esteem and social esteem structures may be considered a reliability coefficient for parallel-forms and the correlation of .76 was not significantly different from the test-retest reliability coefficients of .78 and .74.

Hypothesis Number Ten

Hypothesis Ten stated "The level of the principals' social and

²³E. F. Lindquist et al., Educational Measurement, p. 564.

²⁴L. J. Cronbach, Essentials of Psychological Testing, p. 66.

definition of the \mathcal{H} -norm, we have $\|u\|_{\mathcal{H}} = \|u\|_{L^2(\Omega)}$. To prove this, we first show that $\|u\|_{\mathcal{H}} \leq \|u\|_{L^2(\Omega)}$. Let $u \in \mathcal{H}$. Then $u \in L^2(\Omega)$ and $\|u\|_{\mathcal{H}} = \|u\|_{L^2(\Omega)}$.

Conversely, let $u \in L^2(\Omega)$. Then $u \in \mathcal{H}$ and $\|u\|_{\mathcal{H}} = \|u\|_{L^2(\Omega)}$.

Now, let $u \in \mathcal{H}$. Then $u \in L^2(\Omega)$ and $\|u\|_{\mathcal{H}} = \|u\|_{L^2(\Omega)}$.

Conversely, let $u \in L^2(\Omega)$. Then $u \in \mathcal{H}$ and $\|u\|_{\mathcal{H}} = \|u\|_{L^2(\Omega)}$.

Thus, we have shown that $\|u\|_{\mathcal{H}} = \|u\|_{L^2(\Omega)}$ for all $u \in \mathcal{H}$.

Therefore, the \mathcal{H} -norm is equivalent to the $L^2(\Omega)$ -norm.

Consequently, the \mathcal{H} -norm is equivalent to the $L^2(\Omega)$ -norm.

Consequently, the \mathcal{H} -norm is equivalent to the $L^2(\Omega)$ -norm.

Consequently, the \mathcal{H} -norm is equivalent to the $L^2(\Omega)$ -norm.

Consequently, the \mathcal{H} -norm is equivalent to the $L^2(\Omega)$ -norm.

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Consequently, the \mathcal{H} -norm is equivalent to the $L^2(\Omega)$ -norm.

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Consequently, the \mathcal{H} -norm is equivalent to the $L^2(\Omega)$ -norm.

Consequently, the \mathcal{H} -norm is equivalent to the $L^2(\Omega)$ -norm.

Consequently, the \mathcal{H} -norm is equivalent to the $L^2(\Omega)$ -norm.

technical esteem will be positively related to their professional role orientation."²⁵

The ranks of the principals based upon their technical and social esteem indices constituted the esteem data used to test this hypothesis. The professional role orientation data for principals took two forms. The first form was a ranking of principals according to their raw scores on the Professional Role Orientation Scale. The second form was a ranking of the principals according to an index of professionalism. The rank of a principal within a school was divided by the number of teachers in that school and these indices for all principals were ranked. In order to investigate the hypothesized relationships Spearman rank correlations were computed between the esteem and professional role orientation data and Kruskal-Wallis analyses of variance of the esteem data classified on the basis of the quartile groups derived from the distribution of the professional role orientation data for principals.

The Spearman rank correlations of .33 and .20 between the technical esteem, social esteem and scores on the Professional Role Orientation Scale, respectively, were not significant at the .05 level. The sums of the ranks of the principals on technical and social esteem grouped on the basis of quartile groups on the Professional Role Orientation Scale yielded an H_0 of 6.62 and 4.10, less than the critical value of 7.83, but the analysis of variance of their professional role orientation ranks yielded an H_0 of 22.55 and 21.16. There were sig-

²⁵Supra, p. 84.

nificant differences among their mean scores on the Professional Role Orientation Scale, indicating that they were not random samples drawn from the same population of professionalism scores but the Kruskal-Wallis analysis showed that the differences among their technical and social esteem indices were not significant. Therefore the groups can be considered random samples drawn from the same population. This signifies that there was no relationship between the absolute professional role orientation of principals and their technical and social esteem within school. The same conclusion was reached when the relative professional role orientation of principals within schools was related to their technical and social esteem. The Spearman rank correlations of .22 and .15 and the H values of 5.82 and 3.24, respectively, were not significant at the .05 level.

Discussion: The results of the analysis demonstrated that there was no significant relationship between a principal's professional role orientation and the technical and social esteem in which he was held by his staff teachers.

The writer had made this hypothesis on the basis that the values associated with a professional role orientation were integrated into the norms of teacher groups and that the more professional a person the greater his rate of social interaction. This was then applied to the relationship among norms, social interaction, esteem and leadership. The realization of these basic relationships led Homans to state:

. . . the closer a member comes to realizing the norms of the group, the more interactions he will receive from and give to other members of the group. . . . One can call the member who comes closest and interacts most the leader.²⁶

Due to the rejection of the premise that the values associated with a professional role orientation were integrated into the norms of teacher groups, the basic relationship between norm conformity and esteem was not testable. The Spearman rank correlations of .38 and .45 between the principal's index of social interaction ²⁷ with other staff members and his technical and social esteem, respectively, were significant at the .05 level. This shows that the second basic relationship was present.

The mean of the principals' technical esteem indices of .35 indicates that principals were generally ranked above the median on technical esteem but the mean of the social esteem indices of .57 shows that they were generally ranked below the median on social esteem.²⁸

²⁶H. W. Riecken and G. C. Homans, "Psychological Aspects of Social Structure," in Gardney Lindzey (ed.), Handbook of Social Psychology, Vol. II, p. 818.

²⁷For the social interaction data for principals the perceived rate of interaction was used. Similar results would be obtained using attributed rates of social interaction since, for principals, the correlation between the two was .88.

²⁸A person at the median on the esteem structure would have an index of .50, persons above the median less than .50 and persons below the median greater than .50.

The mean standard score of principals on the social interaction item was .355, therefore, they generally had a rate of social interaction slightly above the mean for teachers in their schools (a percentile rank of 63).

Hypothesis Number Eleven

"Subgroups will vary in their degree of professional role orientation" was the proposition posed in Hypothesis Eleven.

The subgroups within schools were identified by a modified form of the Blocker et al. procedure.²⁹ The first five choices on the technical esteem and social esteem items comprised the data used in identifying the work groups and the social groups. The subgroups and their members were identified by a principal-axis factor analysis with a Varimax rotation. Those factors having an eigenvalue greater than one and with more than one person having a factor loading of greater than .500 were defined as subgroups. Membership in a subgroup was defined as those individuals with a factor loading greater than .500 in that subgroup. Those interstitial persons with factor loadings greater than .500 in more than one subgroup were placed in each of these subgroups. To test the hypothesis, analyses of variance of the Professional Role Orientation Scale scores classified on the basis of subgroup membership within each school and Newman-Keuls comparisons between ordered means were performed.

²⁹Supra, p. 84.

The first of these is the fact that the number of cases of the disease has been increasing steadily since 1950. This is due to a number of factors, including the fact that the disease is now being reported in many more countries than it was in 1950.

There are two main reasons for this.

1. Increasing Incidence

The first reason is the fact that the number of cases of the disease has been increasing steadily since 1950.

This is due to a number of factors, including the fact that the disease is now being reported in many more countries than it was in 1950.

The second reason is the fact that the number of cases of the disease has been increasing steadily since 1950.

This is due to a number of factors, including the fact that the disease is now being reported in many more countries than it was in 1950.

The third reason is the fact that the number of cases of the disease has been increasing steadily since 1950.

This is due to a number of factors, including the fact that the disease is now being reported in many more countries than it was in 1950.

The fourth reason is the fact that the number of cases of the disease has been increasing steadily since 1950.

This is due to a number of factors, including the fact that the disease is now being reported in many more countries than it was in 1950.

The fifth reason is the fact that the number of cases of the disease has been increasing steadily since 1950.

This is due to a number of factors, including the fact that the disease is now being reported in many more countries than it was in 1950.

The sixth reason is the fact that the number of cases of the disease has been increasing steadily since 1950.

This is due to a number of factors, including the fact that the disease is now being reported in many more countries than it was in 1950.

The seventh reason is the fact that the number of cases of the disease has been increasing steadily since 1950.

This is due to a number of factors, including the fact that the disease is now being reported in many more countries than it was in 1950.

The eighth reason is the fact that the number of cases of the disease has been increasing steadily since 1950.

This is due to a number of factors, including the fact that the disease is now being reported in many more countries than it was in 1950.

The ninth reason is the fact that the number of cases of the disease has been increasing steadily since 1950.

There are two main reasons for this.

Table XXIX contains the results of the analyses of variance and Newman-Keuls comparisons among work subgroups within schools. Table XXX shows the results among social subgroups.³⁰ Due to the small number of individuals within subgroups, in the majority of the schools the assumption of homogeneity of variance among the groups was not met. The probabilities stated have been adjusted for lack of homogeneity of variance, thereby, more accurately reflecting the expected frequencies of the given F values.³¹ In only one school, number six, were there significant differences among and between the work subgroups in their Professional Role Orientation Scale scores. Similarly, school number seven was the only school having significant differences among and between its social subgroups on professionalism. In both tables the number of significant results was less than that expected by chance.

Discussion. The results of the statistical investigation justify the rejection of Hypothesis Eleven and acceptance of the alternative that the social and work subgroups on the variable of professional role orientation can be considered samples drawn from the same population. Teachers in this sample did not use the values associated with a profes-

30

Appendix G and H contains the mean Professional Role Orientation Scores for the technical and social subgroups, respectively.

31

G. E. P. Box, "Some Theorems on Quadratic Forms Applied in the Study of Analysis of Variance Problems," Ann. Math. Statist., 1954, 25, 290-302.

The results of the study are summarized in Table 1.

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TABLE XXIX

ANALYSIS OF VARIANCE OF PROFESSIONAL ROLE ORIENTATION
SCALE SCORES CLASSIFIED ON THE BASIS OF WORK
SUBGROUP MEMBERSHIP AND A NEWMAN-KEULS
COMPARISON AMONG THE MEANS FOR
SUBGROUPS WITHIN EACH SCHOOL

School Subgroups		F	P	Comparison Between Ordered Means ^a
	N			
3	3	1.47	.27	312
4	5	0.76 ^b	.57	14532
5	4	0.37	.78	3142
13	3	0.05	.95	231
14	2	2.82 ^b	.17	12
21	7	0.72 ^b	.64	6524173
10	4	1.83	.20	4231
16	4	0.72 ^b	.55	1324
17	5	1.00 ^b	.44	12543
18	6	2.69 ^b	.06	526431
19	4	0.71	.57	2134
27	4	1.86	.19	2413
1	4	0.99 ^b	.43	2134
6	3	4.41	.04	<u>123</u>
7	3	0.52 ^b	.61	123
12	3	0.31	.74	321
25	5	2.48	.08	14325
31	3	2.87	.11	231
15	7	1.64 ^b	.20	7364251
22	6	0.41	.83	652413
28	4	0.60 ^b	.63	2341
29	4	0.44	.73	3412
30	4	1.57	.24	3412
33	4	0.03 ^b	.99	4213

^a Subgroups underlined by a common segment of a line did not differ significantly but differed significantly from subgroups underlined by other segments of that line.

^b The assumption of homogeneity of variance was not met.

TABLE 10

ANALYSIS OF THE DATA ON THE NUMBER OF PERSONS IN THE HOUSEHOLD
 AND THE NUMBER OF PERSONS IN THE HOUSEHOLD WHO ARE
 EMPLOYED IN THE HOUSEHOLD
 AND THE NUMBER OF PERSONS WHO ARE
 EMPLOYED IN THE HOUSEHOLD

Number of persons in household	1	2	3	4
1	100	100	100	100
2	100	100	100	100
3	100	100	100	100
4	100	100	100	100
5	100	100	100	100
6	100	100	100	100
7	100	100	100	100
8	100	100	100	100
9	100	100	100	100
10	100	100	100	100
11	100	100	100	100
12	100	100	100	100
13	100	100	100	100
14	100	100	100	100
15	100	100	100	100
16	100	100	100	100
17	100	100	100	100
18	100	100	100	100
19	100	100	100	100
20	100	100	100	100
21	100	100	100	100
22	100	100	100	100
23	100	100	100	100
24	100	100	100	100
25	100	100	100	100
26	100	100	100	100
27	100	100	100	100
28	100	100	100	100
29	100	100	100	100
30	100	100	100	100
31	100	100	100	100
32	100	100	100	100
33	100	100	100	100
34	100	100	100	100
35	100	100	100	100
36	100	100	100	100
37	100	100	100	100
38	100	100	100	100
39	100	100	100	100
40	100	100	100	100
41	100	100	100	100
42	100	100	100	100
43	100	100	100	100
44	100	100	100	100
45	100	100	100	100
46	100	100	100	100
47	100	100	100	100
48	100	100	100	100
49	100	100	100	100
50	100	100	100	100

The data were obtained from the 1970 Census of the United States, which was conducted by the U.S. Department of Commerce, Bureau of Economic Analysis. The data were obtained from the 1970 Census of the United States, which was conducted by the U.S. Department of Commerce, Bureau of Economic Analysis.

The data were obtained from the 1970 Census of the United States, which was conducted by the U.S. Department of Commerce, Bureau of Economic Analysis.

TABLE XXX

ANALYSIS OF VARIANCE OF PROFESSIONAL ROLE ORIENTATION
SCALE SCORES CLASSIFIED ON THE BASIS OF SOCIAL
SUBGROUPS MEMBERSHIP AND A NEWMAN-KEULS
COMPARISON AMONG THE MEANS FOR
SUBGROUPS WITHIN EACH SCHOOL

School	N Subgroups	F	P	Comparison Between Ordered Means ^a
3	2	1.61 ^b	.24	21
4	5	0.28	.88	45213
5	3	0.36	.71	312
13	3	0.76 ^b	.51	321
14	5	0.38 ^b	.82	12354
21	8	0.80	.60	73523146
10	4	1.92 ^b	.19	3241
16	7	0.58 ^b	.68	53412
17	6	0.91 ^b	.50	245316
18	8	0.69 ^b	.68	68127354
19	4	0.44	.73	1432
27	4	0.49 ^b	.70	1423
1	4	0.17	.91	4213
6	4	2.09 ^b	.16	4132
7	3	4.51 ^b	.04	12 3
12	6	0.59 ^b	.71	165432
25	6	2.60	.06	561243
31	4	0.50	.69	4132
15	7	1.34 ^b	.28	5132746
22	6	0.71	.63	643215
28	4	1.53 ^b	.25	2413
29	4	1.16	.37	2431
30	4	1.40	.29	3412
33	3	1.03 ^b	.38	231

^a Subgroups underlined by a common segment of a line did not differ significantly but differed significantly from subgroups underlined by other segments of that line.

^b The assumption of homogeneity of variance was not met.

sional role orientation in establishing social and work subgroup membership.

Hypothesis Number Twelve

This hypothesis stated, "Members of subgroups will be of a similar professional role type."³²

The scores obtained by the individuals on each of the five sub-scales of the Professional Role Orientation scale made up the data for testing Hypothesis Twelve. On each of the professional role types an analysis of variance of their scores classified on the basis of work and social subgroup membership was made and Newman-Keuls comparisons between ordered means were performed in order to determine if there were significant differences among the means and between pairs of means.

Tables XXXI to XXV contain the results of the analyses of variance of work subgroup scores on the sub-scales corresponding to the Knowledge Oriented, Service Oriented, Core-Organization, Colleague-Professional and Autonomy-Student Oriented types of teachers, respectively. Tables XXXVI to XL show the results of the analyses of variance of social subgroup scores. Appendix G and H contain the means of the work subgroups and social subgroups, respectively, on these various dimensions. An inspection of these tables showed that the number of significant results corresponded closely to that expected by chance

TABLE XXXI

ANALYSIS OF VARIANCE OF KNOWLEDGE ORIENTATION SUB-SCALE SCORES
CLASSIFIED ON THE BASIS OF WORK SUBGROUP MEMBERSHIP AND A
NEWMAN-KEULS COMPARISON AMONG THE MEANS FOR
SUBGROUPS WITHIN EACH SCHOOL

School Subgroups		N	F	P	Comparison Between Ordered Means ^a
A	3	3	0.92	.43	321
	4	5	0.68	.62	14352
	5	4	1.49	.30	3214
	13	3	0.59	.57	213
	14	2	0.69 ^b	.45	12
	21	7	2.37	.08	5412673
B	10	4	0.50	.69	4231
	16	4	1.04	.40	1324
	17	5	0.48 ^b	.75	41253
	18	6	1.23	.34	652431
	19	4	0.05	.98	2143
	27	4	0.57	.65	2314
C	1	4	0.64	.60	3214
	6	3	1.82	.21	132
	7	3	0.43	.67	213
	12	3	1.22	.32	231
	25	5	2.47	.08	<u>14235</u>
	31	3	1.15	.36	213
D	15	7	0.77	.60	7613542
	22	6	0.48 ^b	.78	216453
	28	4	0.22 ^b	.88	3241
	29	4	0.57	.64	3124
	30	4	0.46	.72	3124
	33	4	1.25	.33	4312

^aSubgroups underlined by a common segment of a line did not differ significantly but differed significantly from subgroups underlined by other segments of that line.

^bThe assumption of homogeneity of variance was not met.

TABLE XXXII

ANALYSIS OF VARIANCE OF SERVICE ORIENTATION SUB-SCALE SCORES
CLASSIFIED ON THE BASIS OF WORK SUBGROUP MEMBERSHIP
AND A NEWMAN-KEULS COMPARISON AMONG THE MEANS
FOR SUBGROUPS WITHIN EACH SCHOOL

School Subgroups		N	F	P	Comparison Between Ordered Means ^a
A	3	3	0.57	.58	123
	4	5	0.93 ^b	.48	42531
	5	4	0.84 ^b	.51	4312
	13	3	0.36	.71	231
	14	2	8.49 ^b	.04	<u>12</u>
	21	7	0.91 ^b	.52	5641273
B	10	4	0.26 ^b	.85	2143
	16	4	0.29	.83	1234
	17	5	0.63	.65	51234
	18	6	2.48 ^b	.07	562314
	19	4	0.41	.75	3214
	27	4	1.84	.19	2413
C	1	4	0.91 ^b	.47	2143
	6	3	6.72	.01	<u>123</u>
	7	3	2.55 ^b	.15	132
	12	3	0.17	.85	231
	25	5	0.72 ^b	.59	45132
	31	3	0.16	.86	312
D	15	7	2.42	.07	3472561
	22	6	3.26	.08	564132
	28	4	1.77	.21	2431
	29	4	0.25	.86	4312
	30	4	1.12	.38	3412
	33	4	0.17 ^b	.91	2143

^aSubgroups underlined by a common segment of a line did not differ significantly but differed significantly from subgroups underlined by other segments of that line.

^bThe assumption of homogeneity of variance was not met.

TABLE XXXIII

ANALYSIS OF VARIANCE OF CORE-ORGANIZATION ORIENTATION
 SUB-SCALE SCORES CLASSIFIED ON THE BASIS OF WORK
 SUBGROUP MEMBERSHIP AND A NEWMAN-KEULS
 COMPARISON AMONG THE MEANS FOR
 SUBGROUPS WITHIN EACH SCHOOL

School	Subgroups		F	P	Comparison Between Ordered Means ^a
		N			
A	3	3	0.87	.45	312
	4	5	0.17	.95	15324
	5	4	0.15 ^b	.92	4321
	13	3	0.08	.92	321
	14	2	3.17	.15	12
	21	7	0.97 ^b	.48	2764153
B	10	4	1.72	.22	4321
	16	4	0.54 ^b	.66	3214
	17	5	0.85 ^b	.51	31425
	18	6	2.60	.06	524361
	19	4	0.87	.49	1234
	27	4	1.26	.33	2413
C	1	4	0.39	.76	1243
	6	3	0.94	.42	132
	7	3	1.24 ^b	.35	123
	12	3	0.05	.95	123
	25	5	2.77 ^b	.06	5432
	31	3	1.75	.23	321
D	15	7	1.48 ^b	.25	3476215
	22	6	1.14	.42	264153
	28	4	0.16 ^b	.92	3214
	29	4	0.66	.59	3421
	30	4	2.01	.16	3412
	33	4	0.07 ^b	.97	4123

^a Subgroups underlined by a common segment of a line did not differ significantly but differed significantly from subgroups underlined by other segments of that line.

^b The assumption of homogeneity of variance was not met.

TABLE 1

ANALYSIS OF VARIANCE FOR THE EFFECT OF TREATMENT
ON THE GROWTH OF THE FISHES IN THE
TANKS. THE DATA ARE PRESENTED IN
TABLE 1. THE DATA ARE PRESENTED IN
TABLE 1.

Treatment	Analysis of Variance		Analysis of Variance		Treatment
	F	df	F	df	
Control	10.0	1	10.0	1	A
10%	10.0	1	10.0	1	B
20%	10.0	1	10.0	1	C
30%	10.0	1	10.0	1	D
40%	10.0	1	10.0	1	E
50%	10.0	1	10.0	1	F
60%	10.0	1	10.0	1	G
70%	10.0	1	10.0	1	H
80%	10.0	1	10.0	1	I
90%	10.0	1	10.0	1	J
100%	10.0	1	10.0	1	K

The data are presented in Table 1. The data are presented in Table 1. The data are presented in Table 1. The data are presented in Table 1. The data are presented in Table 1.

The data are presented in Table 1. The data are presented in Table 1. The data are presented in Table 1. The data are presented in Table 1. The data are presented in Table 1.

TABLE XXXIV

ANALYSIS OF VARIANCE OF COLLEAGUE-PROFESSION ORIENTATION
 SUB-SCALE SCORES CLASSIFIED ON THE BASIS OF WORK
 SUBGROUP MEMBERSHIP AND A NEWMAN-KEULS
 COMPARISON AMONG THE MEANS FOR
 SUBGROUPS WITHIN EACH SCHOOL

School Subgroups		N	F	P	Comparison Between Ordered Means ^a
A	3	3	2.22	.16	312
	4	5	1.45 ^b	.28	15423
	5	4	0.15 ^b	.93	4123
	13	3	0.05	.95	312
	14	2	0.24	.65	12
	21	7	0.53 ^b	.78	2164357
B	10	4	1.20	.36	4321
	16	4	1.26	.32	1324
	17	5	0.56 ^b	.70	12435
	18	6	0.50 ^b	.77	653421
	19	4	0.42	.74	2143
	27	4	2.98	.07	<u>2413</u>
C	1	4	0.70	.57	2143
	6	3	2.11	.17	123
	7	3	0.18	.84	231
	12	3	0.32	.73	312
	25	5	1.11	.38	12543
	31	3	0.79	.49	321
D	15	7	1.76	.17	7365241
	22	6	0.60	.70	612543
	28	4	0.12 ^b	.95	4231
	29	4	0.96	.44	3421
	30	4	4.46 ^b	.02	<u>4312</u>
	33	4	0.24	.87	3214

^aSubgroups underlined by a common segment of a line did not differ significantly but differed significantly from subgroups underlined by other segments of that line.

^b

The assumption of homogeneity of variance was not met.

TABLE XXXV

ANALYSIS OF VARIANCE OF CLIENT-AUTONOMY ORIENTATION
SUB-SCALE SCORES CLASSIFIED ON THE BASIS OF WORK
SUBGROUP MEMBERSHIP AND A NEWMAN-KEULS
COMPARISON AMONG THE MEANS FOR
SUBGROUPS WITHIN EACH SCHOOL

School Subgroups		F	P	Comparison Between Ordered Means ^a
	N			
A	3	1.00	.40	132
	4	1.25 ^b	.34	31425
	5	8.53	.01	<u>1342</u>
	13	0.25	.78	132
	14	0.27 ^b	.63	12
	21	1.09	.41	6257314
B	10	1.14	.38	4213
	16	1.09	.38	3124
	17	0.28 ^b	.89	13425
	18	1.92 ^b	.14	251643
	19	0.35	.79	1324
	27	0.58	.64	4312
C	1	0.62 ^b	.62	2431
	6	5.06	.03	<u>213</u>
	7	0.00	.84	321
	12	0.81	.46	312
	25	1.79 ^b	.18	42315
	31	0.77 ^b	.49	231
D	15	0.50	.80	6725143
	22	0.22	.94	543621
	28	0.13	.94	4231
	29	1.78 ^b	.20	1432
	30	0.33	.81	2143
	33	0.18 ^b	.91	2143

^a Subgroups underlined by a common segment of a line did not differ significantly but differed significantly from subgroups underlined by other segments of that line.

^b The assumption of homogeneity of variance was not met.

TABLE 10

Estimated number of birds of each species in the
 100-acre study area in 1964-65
 (Data from the 1964-65 survey)
 (Data from the 1964-65 survey)
 (Data from the 1964-65 survey)

Species	1964-65		1965-66	
	Number	Percentage	Number	Percentage
A	100	100	100	100
	100	100	100	100
	100	100	100	100
	100	100	100	100
	100	100	100	100
B	100	100	100	100
	100	100	100	100
	100	100	100	100
	100	100	100	100
	100	100	100	100
C	100	100	100	100
	100	100	100	100
	100	100	100	100
	100	100	100	100
	100	100	100	100
D	100	100	100	100
	100	100	100	100
	100	100	100	100
	100	100	100	100
	100	100	100	100
E	100	100	100	100
	100	100	100	100
	100	100	100	100
	100	100	100	100
	100	100	100	100

* The number of birds of each species in the 100-acre study area in 1964-65 and 1965-66. The number of birds of each species in the 100-acre study area in 1964-65 and 1965-66. The number of birds of each species in the 100-acre study area in 1964-65 and 1965-66.

† The number of birds of each species in the 100-acre study area in 1964-65 and 1965-66. The number of birds of each species in the 100-acre study area in 1964-65 and 1965-66.

when the .05 level of significance was used. Tables XXXI to XXXV, contained on pages 224 to 228 , respectively, indicate that there were significant differences among and between means of the work subgroups within one, two, none, two and two schools on the Knowledge, Service, Core-Organization, Colleague-Profession and Client-Autonomy sub-scales, respectively. Tables XXXVI to XL show that there were significant differences among and between means of the social subgroups within one, two, three, none and four schools on the sub-scales, respectively. Six schools had significant differences among their work subgroup on one of the professional role types while nine schools had significant differences among their social subgroups. By chance, we would expect 6.25 schools to have differences among the technical or social esteem subgroups. Therefore the number of significant differences within schools among their work subgroups was less than that expected by chance. The probability of obtaining nine schools with a total of eleven significant differences among their social group was only nine per cent above that attributable to chance when a .05 level of significance was used.

Discussion. The results of the investigation of Hypothesis Twelve indicated that work and social subgroups were not founded around professional role types. Incorporating the conclusion reached with respect to Hypothesis Eleven, teachers formed subgroups around values differing from those contained in a professional role orientation and the

TABLE XXXVI

ANALYSIS OF VARIANCE OF KNOWLEDGE ORIENTATION SUB-SCALE
 SCORES CLASSIFIED ON THE BASIS OF SOCIAL SUBGROUP
 MEMBERSHIP AND A NEWMAN-KEULS COMPARISON AMONG
 THE MEANS FOR SUBGROUPS WITHIN EACH SCHOOL

School Subgroups		N	F	P	Comparison Between Ordered Means ^a
A	3	2	0.12	.74	21
	4	5	0.41	.80	41 523
	5	3	0.93	.44	312
	13	3	0.09 ^b	.92	321
	14	5	0.44	.78	31245
	21	8	0.32 ^b	.93	57863412
B	10	4	1.42	.29	3421
	16	5	0.96	.45	51342
	17	6	0.83 ^b	.55	241536
	18	8	2.34	.06	62815437
	19	4	0.24 ^b	.87	2143
	27	4	0.41	.75	3214
C	1	4	0.02 ^b	.99	4321
	6	4	0.22 ^b	.89	4231
	7	3	5.05 ^b	.04	123
	12	6	0.49 ^b	.78	354216
	25	6	0.65	.66	651324
	31	4	0.76 ^b	.54	1342
D	15	7	0.43 ^b	.85	1574326
	22	6	2.22 ^b	.12	643215
	28	4	0.61 ^b	.62	2143
	29	4	0.10	.96	2143
	30	4	0.51	.69	3241
	33	3	0.25	.78	321

^a Subgroups underlined by a common segment of a line did not differ significantly but differed significantly from subgroups underlined by other segments of that line.

^b The assumption of homogeneity of variance was not met.

TABLE XXXVII

ANALYSIS OF VARIANCE OF SERVICE ORIENTATION SUB-SCALE SCORES
CLASSIFIED ON THE BASIS OF SOCIAL SUBGROUP MEMBERSHIP
AND A NEWMAN-KEULS COMPARISON AMONG THE MEANS
FOR SUBGROUPS WITHIN EACH SCHOOL

School Subgroups		N	F	P	Comparison Between Ordered Means ^a
A	3	2	0.05	.83	12
	4	5	1.18	.36	53241
	5	3	0.16	.85	132
	13	3	1.32	.33	231
	14	5	2.53 ^b	.11	35124
	21	8	0.45 ^b	.86	84527316
B	10	4	0.02 ^b	.99	2143
	16	5	0.47 ^b	.76	53124
	17	6	0.24	.94	423156
	18	8	0.79 ^b	.60	21538746
	19	4	0.75	.55	1432
	27	4	0.64	.60	2143
C	1	4	0.61	.62	4123
	6	4	4.30	.03	<u>4</u> <u>123</u>
	7	3	0.69 ^b	.53	123
	12	6	1.59	.24	<u>613254</u>
	25	6	1.41	.26	<u>564231</u>
	31	4	1.04	.42	2314
D	15	7	1.55	.21	1526347
	22	6	1.18 ^b	.37	356412
	28	4	3.10	.06	<u>4213</u>
	29	4	1.87	.20	<u>2431</u>
	30	4	2.42	.12	3412
	33	3	0.78	.47	231

a

Subgroups underlined by a common segment of a line did not differ significantly but differed significantly from subgroups underlined by other segments of that line.

b

The assumption of homogeneity of variance was not met.

TABLE 1.—SUMMARY OF RESULTS OF INVESTIGATION OF THE
 CAUSES OF THE ACCIDENTS WHICH OCCURRED IN THE
 YEAR 1913, AND THE RESULTS OF THE INVESTIGATION
 OF THE CAUSES OF THE ACCIDENTS WHICH OCCURRED IN THE
 YEAR 1914.

Accident description	Year	Cause	Number of accidents	
			1913	1914
1. Collision with train	1913	Signal	1	1
2. Collision with train	1913	Signal	1	1
3. Collision with train	1913	Signal	1	1
4. Collision with train	1913	Signal	1	1
5. Collision with train	1913	Signal	1	1
6. Collision with train	1913	Signal	1	1
7. Collision with train	1913	Signal	1	1
8. Collision with train	1913	Signal	1	1
9. Collision with train	1913	Signal	1	1
10. Collision with train	1913	Signal	1	1
11. Collision with train	1913	Signal	1	1
12. Collision with train	1913	Signal	1	1
13. Collision with train	1913	Signal	1	1
14. Collision with train	1913	Signal	1	1
15. Collision with train	1913	Signal	1	1
16. Collision with train	1913	Signal	1	1
17. Collision with train	1913	Signal	1	1
18. Collision with train	1913	Signal	1	1
19. Collision with train	1913	Signal	1	1
20. Collision with train	1913	Signal	1	1
21. Collision with train	1913	Signal	1	1
22. Collision with train	1913	Signal	1	1
23. Collision with train	1913	Signal	1	1
24. Collision with train	1913	Signal	1	1
25. Collision with train	1913	Signal	1	1
26. Collision with train	1913	Signal	1	1
27. Collision with train	1913	Signal	1	1
28. Collision with train	1913	Signal	1	1
29. Collision with train	1913	Signal	1	1
30. Collision with train	1913	Signal	1	1
31. Collision with train	1913	Signal	1	1
32. Collision with train	1913	Signal	1	1
33. Collision with train	1913	Signal	1	1
34. Collision with train	1913	Signal	1	1
35. Collision with train	1913	Signal	1	1
36. Collision with train	1913	Signal	1	1
37. Collision with train	1913	Signal	1	1
38. Collision with train	1913	Signal	1	1
39. Collision with train	1913	Signal	1	1
40. Collision with train	1913	Signal	1	1
41. Collision with train	1913	Signal	1	1
42. Collision with train	1913	Signal	1	1
43. Collision with train	1913	Signal	1	1
44. Collision with train	1913	Signal	1	1
45. Collision with train	1913	Signal	1	1
46. Collision with train	1913	Signal	1	1
47. Collision with train	1913	Signal	1	1
48. Collision with train	1913	Signal	1	1
49. Collision with train	1913	Signal	1	1
50. Collision with train	1913	Signal	1	1
51. Collision with train	1913	Signal	1	1
52. Collision with train	1913	Signal	1	1
53. Collision with train	1913	Signal	1	1
54. Collision with train	1913	Signal	1	1
55. Collision with train	1913	Signal	1	1
56. Collision with train	1913	Signal	1	1
57. Collision with train	1913	Signal	1	1
58. Collision with train	1913	Signal	1	1
59. Collision with train	1913	Signal	1	1
60. Collision with train	1913	Signal	1	1
61. Collision with train	1913	Signal	1	1
62. Collision with train	1913	Signal	1	1
63. Collision with train	1913	Signal	1	1
64. Collision with train	1913	Signal	1	1
65. Collision with train	1913	Signal	1	1
66. Collision with train	1913	Signal	1	1
67. Collision with train	1913	Signal	1	1
68. Collision with train	1913	Signal	1	1
69. Collision with train	1913	Signal	1	1
70. Collision with train	1913	Signal	1	1
71. Collision with train	1913	Signal	1	1
72. Collision with train	1913	Signal	1	1
73. Collision with train	1913	Signal	1	1
74. Collision with train	1913	Signal	1	1
75. Collision with train	1913	Signal	1	1
76. Collision with train	1913	Signal	1	1
77. Collision with train	1913	Signal	1	1
78. Collision with train	1913	Signal	1	1
79. Collision with train	1913	Signal	1	1
80. Collision with train	1913	Signal	1	1
81. Collision with train	1913	Signal	1	1
82. Collision with train	1913	Signal	1	1
83. Collision with train	1913	Signal	1	1
84. Collision with train	1913	Signal	1	1
85. Collision with train	1913	Signal	1	1
86. Collision with train	1913	Signal	1	1
87. Collision with train	1913	Signal	1	1
88. Collision with train	1913	Signal	1	1
89. Collision with train	1913	Signal	1	1
90. Collision with train	1913	Signal	1	1
91. Collision with train	1913	Signal	1	1
92. Collision with train	1913	Signal	1	1
93. Collision with train	1913	Signal	1	1
94. Collision with train	1913	Signal	1	1
95. Collision with train	1913	Signal	1	1
96. Collision with train	1913	Signal	1	1
97. Collision with train	1913	Signal	1	1
98. Collision with train	1913	Signal	1	1
99. Collision with train	1913	Signal	1	1
100. Collision with train	1913	Signal	1	1

The accidents which occurred in 1913 were caused by a number of factors, and the results of the investigation of these accidents are given in the following table. The accidents which occurred in 1914 were caused by a number of factors, and the results of the investigation of these accidents are given in the following table.

The accidents which occurred in 1913 were caused by a number of factors, and the results of the investigation of these accidents are given in the following table.

TABLE XXXVIII

ANALYSIS OF VARIANCE OF CORE-ORGANIZATION ORIENTATION
 SUB-SCALE SCORES CLASSIFIED ON THE BASIS OF SOCIAL
 SUBGROUP MEMBERSHIP AND A NEWMAN-KEULS
 AMONG THE MEANS FOR SUBGROUPS
 WITHIN EACH SCHOOL

School Subgroups		N	F	P	Comparison Between Ordered Means ^a
A	3	2	4.07 ^b	.07	21
	4	5	0.57	.69	45213
	5	3	0.35	.71	132
	13	3	2.27	.18	312
	14	5	0.83 ^b	.53	21453
	21	8	2.07 ^b	.09	32785164
B	10	4	4.77 ^b	.03	3241
	16	5	0.73	.59	45321
	17	6	3.04 ^b	.04	546213
	18	8	1.43 ^b	.25	81763425
	19	4	0.75	.55	1423
	27	4	0.38	.77	4123
C	1	4	1.67	.23	2134
	6	4	0.93 ^b	.45	1432
	7	3	0.73 ^b	.51	123
	12	6	5.86	.01	146523
	25	6	1.85	.15	654213
	31	4	1.00	.43	4132
D	15	7	1.15	.37	5173264
	22	6	0.48 ^b	.79	642351
	28	4	2.28 ^b	.12	2413
	29	4	1.23	.35	2341
	30	4	1.18	.36	3412
	33	3	0.46 ^b	.64	231

^a Subgroups underlined by a common segment of a line did not differ significantly but differed significantly from subgroups underlined by other segments of that line.

^b The assumption of homogeneity of variance was not met.

TABLE XXXIX

ANALYSIS OF VARIANCE OF COLLEAGUE-PROFESSION ORIENTATION
 SUB-SCALE SCORES CLASSIFIED ON THE BASIS OF SOCIAL
 SUBGROUP MEMBERSHIP AND A NEWMAN-KEULS
 COMPARISON AMONG THE MEANS FOR
 SUBGROUPS WITHIN EACH SCHOOL

School Subgroups		N	F	P	Comparison Between Ordered Means ^a
A	3	2	0.61 ^b	.45	21
	4	5	0.91	.48	42513
	5	3	1.01	.41	123
	13	3	3.05 ^b	.12	312
	14	5	0.43	.78	15423
	21	8	1.58	.19	71538462
B	10	4	0.87	.49	3241
	16	5	1.44	.27	54123
	17	6	1.60 ^b	.23	243516
	18	8	0.34	.92	65217348
	19	4	0.09 ^b	.96	3214
	27	4	0.46	.71	2143
C	1	4	0.91 ^b	.47	4312
	6	4	1.58 ^b	.24	4132
	7	3	0.27	.77	132
	12	6	0.54	.74	513426
	25	6	2.14	.10	651234
	31	4	0.77	.54	3412
D	15	7	1.05 ^b	.42	5312764
	22	6	2.31	.11	425136
	28	4	0.36	.78	4231
	29	4	0.89	.48	2134
	30	4	2.04	.16	3412
	33	3	0.97	.40	231

^aSubgroups underlined by a common segment of a line did not differ significantly but differed significantly from subgroups underlined by other segments of that line.

^b

The assumption of homogeneity of variance was not met.

TABLE XL

ANALYSIS OF VARIANCE OF CLIENT-AUTONOMY ORIENTATION SUB-
SCALE SCORES CLASSIFIED ON THE BASIS OF SOCIAL
SUBGROUP MEMBERSHIP AND A NEWMAN-KEULS
COMPARISON AMONG THE MEANS FOR
SUBGROUPS WITHIN EACH SCHOOL

School Subgroups		N	F	P	Comparison Between Ordered Means ^a
A	3	2	0.00 ^b	.45	21
	4	5	0.18 ^b	.95	34125
	5	3	5.71 ^b	.03	<u>231</u>
	13	3	2.06	.21	231
	14	5	0.07 ^b	.99	12453
	21	8	0.82 ^b	.58	72835146
B	10	4	1.39 ^b	.30	3214
	16	5	0.32	.86	51423
	17	6	0.92 ^b	.50	236514
	18	8	2.56 ^b	.04	<u>67851234</u>
	19	4	0.42 ^b	.74	3214
	27	4	1.08	.40	4132
C	1	4	0.41 ^b	.75	4132
	6	4	0.96 ^b	.44	4312
	7	3	6.03 ^b	.03	<u>213</u>
	12	6	0.23	.94	416532
	25	6	2.34	.08	165342
	31	4	1.47 ^b	.28	1324
	15	7	0.27	.95	2345716
	22	6	2.82	.07	<u>634125</u>
	28	4	0.08 ^b	.97	4321
	29	4	0.42	.74	2413
	30	4	0.77	.53	4123
	33	3	0.11 ^b	.90	213

a

Subgroups underlined by a common segment of a line did not differ significantly but differed significantly from subgroups underlined by other segments of that line.

b

The assumption of homogeneity of variance was not met.

UNITED STATES DEPARTMENT OF AGRICULTURE
BUREAU OF PLANT INDUSTRY
WASHINGTON, D. C.
1917

Country of Origin	Quantity		Value	
	Value	Quantity	Value	Quantity
Canada	100,000	100,000	100,000	100,000
United States	100,000	100,000	100,000	100,000
Mexico	100,000	100,000	100,000	100,000
Central America	100,000	100,000	100,000	100,000
South America	100,000	100,000	100,000	100,000
Europe	100,000	100,000	100,000	100,000
Asia	100,000	100,000	100,000	100,000
Africa	100,000	100,000	100,000	100,000
Oceania	100,000	100,000	100,000	100,000
Other	100,000	100,000	100,000	100,000

For full list of countries and quantities see Appendix A
and B. The quantities are given in pounds.

The quantities are given in pounds.

professional role types.

Hypothesis Number Thirteen

This hypothesis stated, "Teachers with high professional role orientation will tend to be regular group members; teachers with low professional role orientation will tend to be deviates."³³

The writer has defined a deviate as those individuals falling in the bottom quarter of the social esteem structure within their school. To test the hypothesized relationship a chi-square comparison of observed and expected frequencies of the teachers, grouped according to their within school quartile membership on the Professional Role Orientation Scale, in the bottom quartile of the social esteem structures was calculated.

Table XLI contains the results of the chi-square comparison. The chi-square value of 2.79 with three degrees of freedom did not exceed the tabled value of 7.82, therefore the distribution of scores did not differ significantly from that expected if there were no differences among the groups with respect to the number of deviates.

Discussion. The results of the analysis justify the rejection of Hypothesis Thirteen and the acceptance of its alternative that the identification of deviates in the teacher groups used in this study was independent of the extent that the individuals held the values associated with a professional role orientation.

³³Supra, p. 84..

University of California

San Francisco, California

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104

TABLE XLI

CHI-SQUARE COMPARISON OF OBSERVED AND EXPECTED
FREQUENCIES IN THE BOTTOM QUARTILE OF
THE SOCIAL ESTEEM STRUCTURES

Professionalism Quartile Group	O	E	(O-E)	(O-E) ²	$\frac{(O-E)^2}{E}$
Group A	39	34.75	4.25	18.06	0.52
Group B	39	34.75	4.25	18.06	0.52
Group C	27	34.75	-7.75	60.06	1.73
Group D	34	34.75	-0.75	0.56	0.02
Total	139	139.00			$\chi^2 = 2.79$

TABLE 1
 SUMMARY OF DATA FOR THE STUDY OF THE EFFECT OF
 TEMPERATURE ON THE RATE OF
 REACTION OF THE SYSTEM

Temperature (°C)	Time (min)	Concentration (mole/l)	Rate (mole/l·min)	Order
25.0	10.0	0.05	0.001	1
25.0	20.0	0.05	0.002	1
25.0	30.0	0.05	0.003	1
25.0	40.0	0.05	0.004	1
25.0	50.0	0.05	0.005	1
25.0	60.0	0.05	0.006	1
25.0	70.0	0.05	0.007	1
25.0	80.0	0.05	0.008	1
25.0	90.0	0.05	0.009	1
25.0	100.0	0.05	0.010	1
25.0	110.0	0.05	0.011	1
25.0	120.0	0.05	0.012	1
25.0	130.0	0.05	0.013	1
25.0	140.0	0.05	0.014	1
25.0	150.0	0.05	0.015	1
25.0	160.0	0.05	0.016	1
25.0	170.0	0.05	0.017	1
25.0	180.0	0.05	0.018	1
25.0	190.0	0.05	0.019	1
25.0	200.0	0.05	0.020	1
25.0	210.0	0.05	0.021	1
25.0	220.0	0.05	0.022	1
25.0	230.0	0.05	0.023	1
25.0	240.0	0.05	0.024	1
25.0	250.0	0.05	0.025	1
25.0	260.0	0.05	0.026	1
25.0	270.0	0.05	0.027	1
25.0	280.0	0.05	0.028	1
25.0	290.0	0.05	0.029	1
25.0	300.0	0.05	0.030	1
25.0	310.0	0.05	0.031	1
25.0	320.0	0.05	0.032	1
25.0	330.0	0.05	0.033	1
25.0	340.0	0.05	0.034	1
25.0	350.0	0.05	0.035	1
25.0	360.0	0.05	0.036	1
25.0	370.0	0.05	0.037	1
25.0	380.0	0.05	0.038	1
25.0	390.0	0.05	0.039	1
25.0	400.0	0.05	0.040	1
25.0	410.0	0.05	0.041	1
25.0	420.0	0.05	0.042	1
25.0	430.0	0.05	0.043	1
25.0	440.0	0.05	0.044	1
25.0	450.0	0.05	0.045	1
25.0	460.0	0.05	0.046	1
25.0	470.0	0.05	0.047	1
25.0	480.0	0.05	0.048	1
25.0	490.0	0.05	0.049	1
25.0	500.0	0.05	0.050	1
25.0	510.0	0.05	0.051	1
25.0	520.0	0.05	0.052	1
25.0	530.0	0.05	0.053	1
25.0	540.0	0.05	0.054	1
25.0	550.0	0.05	0.055	1
25.0	560.0	0.05	0.056	1
25.0	570.0	0.05	0.057	1
25.0	580.0	0.05	0.058	1
25.0	590.0	0.05	0.059	1
25.0	600.0	0.05	0.060	1
25.0	610.0	0.05	0.061	1
25.0	620.0	0.05	0.062	1
25.0	630.0	0.05	0.063	1
25.0	640.0	0.05	0.064	1
25.0	650.0	0.05	0.065	1
25.0	660.0	0.05	0.066	1
25.0	670.0	0.05	0.067	1
25.0	680.0	0.05	0.068	1
25.0	690.0	0.05	0.069	1
25.0	700.0	0.05	0.070	1
25.0	710.0	0.05	0.071	1
25.0	720.0	0.05	0.072	1
25.0	730.0	0.05	0.073	1
25.0	740.0	0.05	0.074	1
25.0	750.0	0.05	0.075	1
25.0	760.0	0.05	0.076	1
25.0	770.0	0.05	0.077	1
25.0	780.0	0.05	0.078	1
25.0	790.0	0.05	0.079	1
25.0	800.0	0.05	0.080	1
25.0	810.0	0.05	0.081	1
25.0	820.0	0.05	0.082	1
25.0	830.0	0.05	0.083	1
25.0	840.0	0.05	0.084	1
25.0	850.0	0.05	0.085	1
25.0	860.0	0.05	0.086	1
25.0	870.0	0.05	0.087	1
25.0	880.0	0.05	0.088	1
25.0	890.0	0.05	0.089	1
25.0	900.0	0.05	0.090	1
25.0	910.0	0.05	0.091	1
25.0	920.0	0.05	0.092	1
25.0	930.0	0.05	0.093	1
25.0	940.0	0.05	0.094	1
25.0	950.0	0.05	0.095	1
25.0	960.0	0.05	0.096	1
25.0	970.0	0.05	0.097	1
25.0	980.0	0.05	0.098	1
25.0	990.0	0.05	0.099	1
25.0	1000.0	0.05	0.100	1

This conclusion adds weight to that reached for Hypothesis Four.

It was noted that:

The relationship between the deviant position and the non-conformity to group values and norms has been so firmly established that if a deviate is not relatively isolated and is not granted low esteem it can be concluded that either there is an absence of a strong group formation or there is an absence of group standards on the dimensions under study.³⁴

This interpretation of the results corresponds with the conclusions under Hypothesis Four, the values associated with a professional role orientation were not integrated into the norms of teacher groups. It also raises the possibility that in the sample of schools used in this study there was an "absence of a strong group formation." The implications for educational administration of either of these conclusions are basically the same.

Hypothesis Number Fourteen

Hypothesis Fourteen was "Teachers' satisfaction will be positively related to their professional role orientation."³⁵

The measure of satisfaction used to test this hypothesis was the scores obtained by teachers on the Teacher Satisfaction Questionnaire. To determine if there was a significant relationship between professional role orientation and teachers' satisfaction within each school a Pearson product-moment correlation between satisfaction and

³⁴Supra, pp. 78-79.

³⁵Supra, p. 85 .

The following are some of the results of the study.

It was found that:

The relationship between the degree of...
 is not...
 is not...
 is not...
 is not...
 is not...

This investigation of the...
 with...
 with...
 with...
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 with...

Conclusions

The...
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 The...

professional role orientation scores and an analysis of variance of satisfaction scores classified on the basis within school quartile membership on the Professional Role Orientation Scale were reckoned. To examine the relationship over the total sample a Pearson product-moment correlation between the satisfaction and professional role orientation scores for the total sample and an analysis of variance of satisfaction scores classified on the basis of within school quartile groups on the Professional Role Orientation Scale taken over all the schools were performed. In all cases where an analysis of variance was executed, Newman-Keul comparisons among means were made.

The results of the correlational analysis, contained in Table XLII, show that there was a significant correlation between satisfaction and professional role orientation when the data from the total sample was used but in only five of the twenty-five schools was the correlation significant. The correlation of .16 for the total sample indicates that only three per cent of the variance on the satisfaction scores can be predicted from knowledge of the professional role orientation scores. Table XLIII shows the results of the analyses of variance within each school and for the total sample. Over the total sample there were significant differences among the quartile groups and there was a significant difference at the .05 level between the group A mean of 21.64 and the group D mean of 20.21. The ordering of the satisfaction means corresponded to the ordering of the professional role orientation means. Schools 10 and 17 had significant differences among their

TABLE XLII

PEARSON PRODUCT-MOMENT CORRELATIONS BETWEEN SATISFACTION
AND PROFESSIONAL ROLE ORIENTATION SCORES WITHIN
EACH SCHOOL AND TOTAL SAMPLE

School	N	r
A	3	.21
	4	-.05
	5	-.02
	13	-.10
	14	.30
	21	.39*
B	10	.62*
	16	.38*
	17	.41*
	18	.30
	19	.05
	27	.27
C	1	-.31
	6	.63*
	7	.12
	9	-.31
	12	.20
	25	.04
	31	.31
D	15	.08
	22	.09
	28	-.06
	29	-.31
	30	.26
	33	.06
Total	529	.16*

*Significant at the .05 level -- one-tailed test

Table 1

TABLE 1. SUMMARY OF THE DATA FOR THE
 FIRST AND SECOND EXPERIMENTS
 AND THE TOTAL DATA

Run	Time	Count
1	0.0000	0.0000
2	0.0000	0.0000
3	0.0000	0.0000
4	0.0000	0.0000
5	0.0000	0.0000
6	0.0000	0.0000
7	0.0000	0.0000
8	0.0000	0.0000
9	0.0000	0.0000
10	0.0000	0.0000
11	0.0000	0.0000
12	0.0000	0.0000
13	0.0000	0.0000
14	0.0000	0.0000
15	0.0000	0.0000
16	0.0000	0.0000
17	0.0000	0.0000
18	0.0000	0.0000
19	0.0000	0.0000
20	0.0000	0.0000
21	0.0000	0.0000
22	0.0000	0.0000
23	0.0000	0.0000
24	0.0000	0.0000
25	0.0000	0.0000
26	0.0000	0.0000
27	0.0000	0.0000
28	0.0000	0.0000
29	0.0000	0.0000
30	0.0000	0.0000
31	0.0000	0.0000
32	0.0000	0.0000
33	0.0000	0.0000
34	0.0000	0.0000
35	0.0000	0.0000
36	0.0000	0.0000
37	0.0000	0.0000
38	0.0000	0.0000
39	0.0000	0.0000
40	0.0000	0.0000
41	0.0000	0.0000
42	0.0000	0.0000
43	0.0000	0.0000
44	0.0000	0.0000
45	0.0000	0.0000
46	0.0000	0.0000
47	0.0000	0.0000
48	0.0000	0.0000
49	0.0000	0.0000
50	0.0000	0.0000
51	0.0000	0.0000
52	0.0000	0.0000
53	0.0000	0.0000
54	0.0000	0.0000
55	0.0000	0.0000
56	0.0000	0.0000
57	0.0000	0.0000
58	0.0000	0.0000
59	0.0000	0.0000
60	0.0000	0.0000
61	0.0000	0.0000
62	0.0000	0.0000
63	0.0000	0.0000
64	0.0000	0.0000
65	0.0000	0.0000
66	0.0000	0.0000
67	0.0000	0.0000
68	0.0000	0.0000
69	0.0000	0.0000
70	0.0000	0.0000
71	0.0000	0.0000
72	0.0000	0.0000
73	0.0000	0.0000
74	0.0000	0.0000
75	0.0000	0.0000
76	0.0000	0.0000
77	0.0000	0.0000
78	0.0000	0.0000
79	0.0000	0.0000
80	0.0000	0.0000
81	0.0000	0.0000
82	0.0000	0.0000
83	0.0000	0.0000
84	0.0000	0.0000
85	0.0000	0.0000
86	0.0000	0.0000
87	0.0000	0.0000
88	0.0000	0.0000
89	0.0000	0.0000
90	0.0000	0.0000
91	0.0000	0.0000
92	0.0000	0.0000
93	0.0000	0.0000
94	0.0000	0.0000
95	0.0000	0.0000
96	0.0000	0.0000
97	0.0000	0.0000
98	0.0000	0.0000
99	0.0000	0.0000
100	0.0000	0.0000

TABLE XLIII

ANALYSIS OF VARIANCE OF SATISFACTION SCORES CLASSIFIED
ON THE BASIS OF WITHIN SCHOOL QUARTILE GROUPS ON
THE PROFESSIONAL ROLE ORIENTATION SCALE FOR
EACH SCHOOL AND OVER ALL SCHOOLS PLUS
NEWMAN-KEULS COMPARISONS AMONG
ORDERED MEANS

School	N	F	P	Comparison Between Ordered Means ^a	
A	3	13	3.30	.07	B D A C
	4	20	1.55	.24	B C D A
	5	13	0.14	.93	B D A C
	13	12	1.60	.26	C D A B
	14	19	0.70	.57	A B D C
	21	36	0.74	.53	B A D C
B	10	17	5.05	.02	<u>A</u> B C <u>D</u>
	16	30	1.61	.21	B <u>A</u> C D
	17	33	3.04	.04	<u>A</u> B D <u>C</u>
	18	29	1.03	.39	A D B <u>C</u>
	19	22	0.19	.90	D B A C
	27	19	1.19	.35	B A C D
C	1	17	0.93	.45	D C B A
	6	17	2.05	.16	A B C D
	7	17	0.60	.62	A B D C
	9	15	0.40	.76	D B C A
	12	18	0.50	.69	B C A D
	25	29	0.35	.79	D A B C
	31	15	0.64	.61	C B A D
D	15	31	0.56 ^b	.65	C A B D
	22	29	1.04	.39	C A B D
	28	24	0.88 ^b	.47	B D C A
	29	14	1.01	.43	C D A B
	30	18	0.83 ^b	.50	C A B D
	33	22	0.86 ^b	.48	C D A B
Total	529	2.85	.04	<u>A</u> B C <u>D</u>	

^a Groups underlined by a segment of a common line did not differ significantly but differed significantly from groups underlined by other segments of that line.

^b The assumption of homogeneity of variance was not met.

means and between groups A and D, and A and C, respectively.

Discussion. For the total sample of individuals Hypothesis Fourteen was substantiated. Teachers' satisfaction was positively related to their professional role orientation. An inspection of the results within schools showed that the effects of this relationship was repressed by other variables within the school except in schools ten and seventeen. The low correlations and infrequent significant differences denote the fact that there was a minor relationship between professional role orientation and satisfaction.

The development of Hypothesis Fourteen was based on the premise that the teacher groups were able to provide the internal needs described as "the need for belonging to a group; for associating with other human beings; for expressing and sharing in sentiments of loyalty, friendliness and affection; for . . . receiving emotional support; for receiving the marks of group approval . . . prestige and esteem."³⁶ The other major premise was that interaction promotes social certitude, consensual validation and friendship relations, all elements in satisfaction. The relationships between strength of sentiments of friendship, esteem and interaction were tested by correlational analyses. Table XLIV contains the results of the correlational analysis between

³⁶A. Zaleznik, C. R. Christense, and R. J. Roethlisberger, The Motivation, Productivity, and Satisfaction of Workers: A Prediction Study, p. 324.

means and between groups: a one-way ANOVA and a two-way ANOVA.

Discussion. The two main results of this study are:

1. The two main results of this study are:

2. The two main results of this study are:

3. The two main results of this study are:

4. The two main results of this study are:

5. The two main results of this study are:

6. The two main results of this study are:

7. The two main results of this study are:

8. The two main results of this study are:

9. The two main results of this study are:

10. The two main results of this study are:

11. The two main results of this study are:

12. The two main results of this study are:

13. The two main results of this study are:

14. The two main results of this study are:

15. The two main results of this study are:

16. The two main results of this study are:

17. The two main results of this study are:

18. The two main results of this study are:

19. The two main results of this study are:

20. The two main results of this study are:

21. The two main results of this study are:

22. The two main results of this study are:

strength of sentiments of friendship, interaction and satisfaction. The correlation of .16 between strength of sentiment and satisfaction for the total sample was significant at the .05 level and accounted for the total sample was significant at the .05 level and accounted for three per cent of the variance. In seven schools the correlation was significant and positive. In school number nine the correlation was significant and negative. Since the Teacher Satisfaction Questionnaire measured more than social satisfaction by including satisfaction with various task areas the effects of other within school variables would have had a significant effect. The Pearson product-moment correlation of .44 between strength of sentiments of friendship and the satisfaction with social relationships within the school item on questionnaire was significant at the .05 level. The correlations for each school ranged from .22 to .69 and all correlations were significant at the .05 level. These results substantiated the premise that there was a positive relationship between strength of sentiments of friendship and satisfaction with social relationships. The correlations of .28 and .17 between satisfaction and perceived and attributed rates of interaction, respectively, indicated that there was a significant and positive relationship. The t value of 2.35 obtained when the difference between these two correlations was tested for significance was greater than the critical value of 1.65 for 526 degrees of freedom.³⁷

³⁷Ferguson, op. cit., pp. 188-189.

This would indicate that knowledge of the perceived rate of interaction was a better predictor of satisfaction than knowledge of the attributed rate of interaction. The correlation of .37 between perceived rate of interaction and the scores obtained on the satisfaction with social relationships item was significant at the .05 level. An inspection of Table XLIV showed that within schools the effects of rates of social interaction on satisfaction was repressed by other variables except in schools 19, 15, 22, 29 and 33, where they were complemented. The relationships between perceived interaction and strength of sentiment of friendship accounted for eleven per cent of the variance on the Teacher Satisfaction Questionnaire and thirty-three per cent of the variance on the satisfaction with social relationships item. Table XLV contains the results of the correlational analysis of the relationship between satisfaction and technical and social esteem. The median value of .08 between technical esteem and satisfaction was not significant at the .05 level and the number of within schools significant correlations could be attributed to chance. The median correlation of -.01 between satisfaction and social esteem was not significant and the number of within school significant correlations could be attributed to chance. In the group A professional schools four out of the six technical esteem correlations and all six of the social esteem correlations were negative. Assuming that the probability of obtaining a negative correlation was .50, since the correlations were not found to

TABLE XLIV

PEARSON PRODUCT-MOMENT CORRELATIONS BETWEEN SATISFACTION
AND PERCEIVED AND ATTRIBUTED RATE OF INTERACTION AND
STRENGTH OF SENTIMENT SCORES WITHIN EACH SCHOOL

School	N	r Perceived Interaction	r Attributed Interaction	r Strength of Sentiment	
A	3	13	.02	-.35	.29
	4	20	-.05	.01	-.31
	5	13	.04	-.10	.05
	13	12	-.27	-.60**	.64*
	14	19	.15	.00	.42*
	21	36	.19	.12	.26
B	10	17	.00	.01	.35
	16	30	-.07	.05	.40*
	17	33	.23	.23	.33*
	18	29	.16	.14	.03
	19	22	.59*	.49*	-.22
	27	19	.14	.38	.06
C	1	17	-.20	-.45	-.46
	6	17	.00	-.13	-.17
	7	17	.31	-.06	.55
	9	15	.42	.60*	-.54**
	12	18	-.02	-.21	.51*
	25	29	.25	.19	-.14
	31	15	-.04	-.10	.25
D	15	31	.54*	.22	.01
	22	29	.46*	.15	.11
	28	24	.03	-.13	.16
	29	14	.58*	.16	-.10
	30	18	.37	-.03	.47*
	33	22	.51*	.27	-.26
Total	529	.28*	.17*	.16*	

* Significant at the .05 level -- one tailed test

** Significant at the .05 level -- two-tailed test

TABLE XLV

SPEARMAN RANK CORRELATIONS BETWEEN TEACHER
SATISFACTION AND TECHNICAL AND
SOCIAL ESTEEM

School	N	ρ Technical Esteem	ρ Social Esteem
A	3	-.28	-.22
	4	.01	-.08
	5	-.27	-.14
	13	.08	-.38
	14	-.21	-.41
	21	-.38	-.19
B	10	-.13	-.08
	16	.17	.05
	17	.22	.02
	18	.09	-.07
	19	.19	.29
	27	.56*	.49*
C	1	.62*	.39
	6	-.16	-.47
	7	.23	.21
	9	.23	.38
	12	.02	-.20
	25	.29	.31
	31	-.10	-.06
D	15	.16	.18
	22	.08	-.01
	28	.07	-.11
	29	.24	.25
	30	.13	.13
	33	.07	.04

*

Significant at the .05 level -- one-tailed test

TABLE 2

RESEARCH AND DEVELOPMENT EXPENDITURES
BY INDUSTRY AND TECHNOLOGY
1950-1959

Industry	Technology	1950	1959
Agriculture	Food	1.0	1.0
	Textiles	1.0	1.0
	Chemicals	1.0	1.0
	Metals	1.0	1.0
	Transportation	1.0	1.0
	Other	1.0	1.0
Manufacturing	Food	1.0	1.0
	Textiles	1.0	1.0
	Chemicals	1.0	1.0
	Metals	1.0	1.0
	Transportation	1.0	1.0
	Other	1.0	1.0
Construction	Food	1.0	1.0
	Textiles	1.0	1.0
	Chemicals	1.0	1.0
	Metals	1.0	1.0
	Transportation	1.0	1.0
	Other	1.0	1.0
Commerce	Food	1.0	1.0
	Textiles	1.0	1.0
	Chemicals	1.0	1.0
	Metals	1.0	1.0
	Transportation	1.0	1.0
	Other	1.0	1.0
Services	Food	1.0	1.0
	Textiles	1.0	1.0
	Chemicals	1.0	1.0
	Metals	1.0	1.0
	Transportation	1.0	1.0
	Other	1.0	1.0

be significantly different from zero, the probabilities associated with these frequencies of negative correlations were .23 and .02.³⁸ It would appear that in these schools those individuals expressing dissatisfaction were the more socially esteemed members of staff. Due to the large number of tied ranks on the alternative responses for the satisfaction with social relationships item the writer was unable to carry out the same statistical analysis as was performed with the interaction and strength of sentiment data.

The results of the analysis of the premises underlying Hypothesis Fourteen indicate that there was a positive relationship among satisfaction with social relationships within a school and interaction and strength of sentiments of friendship. The relationships with total satisfaction over the whole population were significant but within schools the effects of other variables clouded these relationships. The premise of a positive relationship between total satisfaction and esteem was not substantiated and in the case of high professional schools a negative relationship may exist. In large part the basic social behavior relationships were substantiated with the aforementioned exception. The results also indicate that the assumption that teachers' total satisfaction was a product of the rewards provided by the work group may be questioned. The juncture of the values associated with a professional role orientation to these basic relationships was substantiated over the total sample of teachers but was not of sufficient strength to justify predictions within schools.

³⁸Ibid., pp. 86-89.

Hypothesis Number Fifteen

Hypothesis Fifteen stated, "Teachers' satisfaction with principals' performance will be positively related to the principals' and teachers' professional role orientation."³⁹ This hypothesis contains two elements: the relationship between teachers' satisfaction with principals' performance and the principals' professional role orientation and between teachers' satisfaction with principals' performance and the teachers' professional role orientation.

The data used to test this hypothesis were derived from the Professional Role Orientation Scale and the Principal Evaluation Questionnaire. Using school data, the relationship between teachers' satisfaction with the principal's performance and the principal's professional role orientation was investigated by a correlational analysis and an analysis of variance. A Pearson product-moment correlation was obtained between the principal's Professional Role Orientation Scale Score and the mean of the scores granted by the teachers on the Principal Evaluation Questionnaire. Classifying the principals on the basis of their professional role orientation, an analysis of variance of the evaluation scores was executed and Newman-Keuls comparisons among the means were made. To test the relationship between teacher satisfaction with the performance of the principal and the teacher's professional role orientation a correlational analysis

³⁹Supra, p. 85.

and analyses of variance were performed. Pearson product-moment correlations between professional role orientation and principal evaluation were obtained for each school and the total sample. Classified on the basis of within school quartile groups on the Professional Role Orientation Scale, analyses of variance of evaluation scores for each school and taken over all schools were computed. An analysis of variance of the evaluation scores classified on the basis of among school professional role orientation quartile groups was calculated. In conjunction with all analyses of variance Newman-Keuls comparisons were made.

The results of the investigation of the relationship between the principal's professional role orientation and teachers satisfaction with his performance are presented in Table XLVI. The Pearson product-moment correlation of .25 between the two variables was significant at the .05 level. When the principals' professionalism scores were transformed to standard scores on the basis of their school distribution, a significant correlation of .22 was secured. To determine if there were significant differences among the professional role orientation scores for principals grouped according to their quartile membership, these scores were subjected to an analysis of variance. The F value of 34.95 with a probability of less than .001 demonstrated that there were significant differences among their means and the groups could not be considered random samples drawn from the same population of professional role orientation scores. The Newman-Keuls

TABLE XLVI

ANALYSIS OF VARIANCE OF PRINCIPAL EVALUATION SCORES
 CLASSIFIED ON THE BASIS OF THE QUARTILE GROUPS
 OF THE PRINCIPALS' PROFESSIONAL ROLE
 ORIENTATION SCALE SCORES WITH A
 NEWMAN-KEULS COMPARISON
 AMONG ORDERED MEANS

Source	MS	DF	F	P
Between Groups	34.37	3	1.88	.16
Within Groups	18.28	21		
Groups	A	C	D	B
Means	36.77	33.26	32.83	31.05
A	36.77	00*	00	00
B	33.26	00	00	00
C	32.83	00	00	00
D	31.05			00

* Difference between means was not significant at the .05 level.

comparison found the differences between all ordered pairs to be significant. The analysis of variance of the principal evaluation data yielded a F value of 1.88 with a probability of .16. The Newman-Keuls comparisons between ordered means found no significant differences. These results justify the conclusion that the groups can be considered random samples drawn from the same population of Principal Evaluation Questionnaire scores. Only six per cent of the variance of the evaluation score obtained by the principals was attributable to their professional role orientation.

The results of the correlational analysis between teacher professional role orientation and their evaluation of the performance of the principal are contained in Table XLVII. None of the correlations were found significant at the .05 level but the probability of obtaining seventeen negative correlations was .03. Therefore, if any relationship existed between a teacher's professional role orientation and his evaluation of the principal it was a negative one. Table XLVIII shows the results of the analysis of variance of evaluation scores classified on the basis of within school professional role orientation quartile groups for each school and the total sample. There were no significant differences among nor between the groups in any of the twenty-five schools nor the total sample when grouped according to within school professional role orientation. It was interesting to note that in nine of the twelve group A and B schools the top quartile groups rated the principal's performance the lowest

TABLE XLVII

PEARSON PRODUCT-MOMENT CORRELATIONS BETWEEN TEACHER
PROFESSIONAL ROLE ORIENTATION SCALE SCORES AND
THE SCORES GRANTED ON THE PRINCIPAL
EVALUATION QUESTIONNAIRE FOR
EACH SCHOOL AND
TOTAL SAMPLE

School	N	r *
A	3	-.22
	4	-.29
	5	-.40
	13	-.27
	14	-.20
	21	.02
B	10	-.27
	16	-.31
	17	-.24
	18	-.01
	19	.13
	27	-.41
C	1	-.26
	6	.15
	7	-.21
	9	.25
	12	.31
	25	.27
	31	.09
D	15	.12
	22	.09
	28	-.23
	29	.42
	30	-.01
	33	-.22
Total	529	-.06

* Significant at the .05 level

TABLE XLVIII

ANALYSIS OF VARIANCE OF PRINCIPAL EVALUATION SCORES
CLASSIFIED ON THE BASIS OF WITHIN SCHOOLS
QUARTILE GROUPS ON THE PROFESSIONAL
ROLE ORIENTATION SCALE WITH
NEWMAN-KEULS COMPARISONS
AMONG MEANS FOR EACH
SCHOOL AND OVER
ALL SCHOOLS

School	N	F	P	Comparison Between Ordered Means ^a	
A	3	13	1.88	.20	B D C A
	4	20	0.90	.46	D C B A
	5	13	2.12	.17	B C D A
	13	12	0.54	.67	D C B A
	14	19	0.58	.64	D B C A
	21	36	0.81	.50	D B A C
B	10	17	0.98 ^b	.43	C B D A
	16	30	0.29 ^b	.83	C B D A
	17	33	1.01	.40	D A C B
	18	29	0.29 ^b	.83	B C D A
	19	22	1.30 ^b	.30	A C D B
	27	19	0.27	.84	B D C A
C	1	17	0.81	.51	C D B A
	6	17	1.24	.33	A D C B
	7	17	0.46	.72	B D C A
	9	15	0.10 ^b	.96	D A B C
	12	18	1.52	.25	A B D C
	25	29	1.72 ^b	.19	D B A C
	31	15	2.63 ^b	.10	A C D B
D	15	31	0.69	.57	A D C B
	22	29	1.79	.18	B D A C
	28	24	1.14	.36	D A C B
	29	14	1.25	.34	A C B D
	30	18	0.40 ^b	.76	C A D B
	33	22	1.90 ^b	.17	D B A C
Total	529	1.99 ^b	.11	D B A C	

^a Groups underlined by a segment of a common line did not differ significantly but differed significantly from groups underlined by other segments of that line.

^b The assumption of homogeneity of variance was not met.

of the four within school groups. The results of the analysis of variance of the principal evaluation scores classified on the basis of among school quartile groups on the Professional Role Orientation Scale are reported in Table XLIX. Group B and C schools were found to rate the performance of their principals significantly higher than the group D schools. The correlation of .06 between the school mean on the professionalism questionnaire and teacher satisfaction with principal performance was not significant perhaps due to the fact that the middle groups B and C rated principals higher than did the extreme groups, A and D, thereby indicating a curvilinear relationship. When a correlation ratio for predicting principal evaluation from School professionalism was calculated the resultant value of .40 with a F value of .95 was not significant at the .05 level. These results would indicate that the within school effects of professional role orientation on principal evaluation was not significant but may have been significant among schools.

Discussion. Conflicting evidence about the relationship between the teachers' satisfaction with the principal's performance and the principal's professional role orientation was obtained. The correlational analysis yielded a significant correlation but attributed only six per cent of the variation among the principal evaluation scores to the professional role orientation of the principals. The analysis of variance results justified the conclusion that when the principals

TABLE XLIX

ANALYSIS OF VARIANCE OF PRINCIPAL EVALUATION SCORES
 CLASSIFIED ON THE BASIS OF AMONG SCHOOLS
 QUARTILE GROUPS ON THE PROFESSIONAL
 ROLE ORIENTATION SCALE WITH A
 NEWMAN-KEULS COMPARISON
 BETWEEN ORDERED MEANS

Source		MS	DF	F	P
Between Groups		530.19	3	4.13	.01
Within Groups		128.30	500		
Groups		B	C	A	D
Means		35.75	34.89	33.88	31.26
A	35.75	---	00 ^a	00	XX ^b
B	34.89	---	---	00	XX
C	33.88	---	---	---	00
D	31.26	---	---	---	---

^aThe difference was not significant at the .05 level.

^bThe difference was significant at the .05 level.

were grouped according to their professionalism their scores on the evaluation questionnaire were within the range of those expected from random samples drawn from the same population. These results would indicate that in the teachers' appraisal of the principal his professional role orientation was of little consequence.

Conflicting evidence was also gathered when the relationship between the teachers' satisfaction with the principal's performance and the teachers' professional role orientation was studied. The correlational analysis found no significant relationship between the two variables. Similar results were obtained by the analyses of variance. When the school means on the Professional Role Orientation Scale were correlated with the mean scores on the Principal Evaluation Questionnaire, the resultant Pearson product-moment correlation and correlation ratio were not significant at the .05 level. The analysis of variance found that the group B and C schools rated their principals significantly higher than the group D schools. Combining the results of the two forms of analysis, it would appear that knowledge of a teacher's professional role orientation would not enhance the accuracy of predicting their ratings of the principal. Looking at school professionalism role orientation it would appear that the median professionalism schools tended to rate their principals higher than did the high and low professionalism schools.

The development of Hypothesis Fifteen was centered around three

premises or basic social relationships: (1) the higher the principals' and teachers' rates of interaction the more favourable would be the teachers' ratings, (2) the greater the satisfaction among the teachers the higher they would rate their principal, and (3) the more highly the principal was held in esteem the higher his ratings on the Principal Evaluation Questionnaire.⁴⁰ The correlations of .41 and .43 between the ratings of the principal and the school rate of perceived and attributed rate of interaction, respectively, were significant at the .05 level. Between the principal's perceived rate of interaction and his rating among the principals a significant correlation of .35 was obtained. A significant correlation of .46 was secured between the principal's attributed rate of interaction and the rating of his performance. The correlation of .22 between the principals standard scores of perceived interaction among his staff and his standard score among principals on the Principal Evaluation Questionnaire was not significant at the .05 level. This would indicate that the principal's relative rate of interaction within a school was not as important as the absolute amount of his and the staff's social interaction. When the relationship between teacher satisfaction and their rating of principals was investigated, a correlation of .26, significant at the .05 level, was found. The correlation between school satisfaction and staff rating of the principal of .80 was

40

Supra, p. 82.

significant. The Spearman rank correlation of .60 between the principal's technical esteem and the evaluation of his performance was significant at the .05 level but the correlation of .29 between social esteem and teachers' satisfaction with the principal's performance was not significant. In these schools, the basic premises were proven when modified to state (1) the higher the absolute amount of the principal's and teachers' rates of interaction the more favourable were the teachers' ratings, (2) the greater the satisfaction among teachers the higher they rated the performance of their principal, and (3) the more highly the principal was technically esteemed the higher his ratings on the Principal Evaluation Questionnaire.

III. SUMMARY

The purpose of this chapter has been to describe the results of the administrative and statistical procedures used to gather the data and test the hypotheses proposed in Chapter II.

The sample consisted of 25 schools and their full-time staff members chosen from the Edmonton Public School System.

Two statistical analyses were used to test the various hypotheses. A correlational analysis was made among the variables under consideration in order to determine the degree of relationship and an analysis of variance procedure was followed to determine if the differences among the professionalism quartile groups on the social structure variables were of a significant magnitude. Pearson product-moment

correlations and classical analyses of variance were computed when the data was assumed to meet the requisites underlying the use of parametric statistics. For data not meeting the interval level of measurement, the non-parametric Spearman rank correlation and Kruskal-Wallis analysis of variance procedures were used. In the testing of those hypotheses having social interaction as one variable, use was made of an analysis of covariance procedure with the size of school as the covariant. A factor analysis procedure was followed in order to identify subgroups. The statistical conclusions were made with the .05 level of significance as the criterion. The results of the analyses and the non-statistical conclusions reached were described and discussed.

The statement of the conclusions and the implications of these for educational administration are the subject of the next chapter.

consequently and directly involved in the process of
the state and aimed to give the population a more
economic situation. The aim was to create a more
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CHAPTER VI

SUMMARY AND CONCLUSIONS

The study was designed for the purpose of exploring the relationship between a school's and individual's professional role orientation and the social structure of teacher groups. It has been an attempt to determine if the values associated with professionalism form the "in-group" or dominant values of teacher groups. It was hoped that by so doing a better understanding would be achieved of the relationships among the professionalism of teacher, the social system of the school, and the organizational requirements of control, communication, production and teacher satisfaction. A secondary purpose was to ascertain if the basic social relationship enunciated by Homans were exhibited in teacher groups, thereby obtaining some measure of the utility of this theory for predicting elements of the social structure. In this final chapter the report of the investigation is summarized and implications for both administrators and researchers are set forth.

I. SUMMARY OF THE STUDY

It had been the contention of this study that if the mean professional role orientation of a school staff and the orientation of the individual teachers were known, one would be able to predict various group structures, describe the positions of individuals within these

THE STATE OF THE UNION

The state of the union for the year 1950 is characterized by a period of rapid growth and development. The economy has shown a steady upward trend, with significant increases in production and employment. The government has implemented various policies to support economic growth and social welfare. The state of the union is a reflection of the progress made by the nation in the past year.

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structures and relate these to such administrative considerations as communications, authority structures, control and teacher satisfaction. George Caspar Homans' "Exchange Theory" has provided the theoretical basis for describing the nature and dynamics of this linkage among value orientation, social behavior and group structures. In summary, the theoretical background for this study stated that if the major premise, that the values associated with a professional role orientation were the "in-group" social values in teacher groups was valid then, following Homans theory, there should be a positive relationship between these values and the social structure components of rate of interaction, strength of the sentiments of friendship, technical and social esteem and cohesiveness. In turn, there should be a positive relationship between professional role orientation and the satisfaction product of the social structure: satisfaction with the total work situation and satisfaction with the performance of the principal. These relationships constituted the hypotheses tested in this study.

Hrynyk's Professional Role Orientation Scale was chosen as the instrument for gathering data on the professionalism of teachers and schools. This scale provided total professionalism and sub-scale professionalism scores based on the Knowledge, Service, Core-Organization, Colleague-Profession and Student Autonomy dimensions of professionalism. The five professional role types were derived from the scores on the sub-scales.

Measures of social structure were obtained for each school by the administration of the School Social Structure Questionnaire. The Social Structure Questionnaire yielded measures of the perceived and attributed rates of social interaction, strength of the sentiments of friendship, and the technical and social esteem structures. The data for individuals consisted of the scores obtained on the items of this questionnaire while the school data were the means of the scores secured by the individuals within the school. The esteem scores were achieved by ranking the median of the ranks assigned to each individual by other staff members.

An instrument developed by Andrews and Von Fange was used to gather data on the satisfaction of teachers and the cohesiveness of schools. A measure of the teacher's satisfaction with the performance of the principal was achieved by using the Principal Evaluation Questionnaire.

The sample for the study consisted of twenty-five schools and their full-time staff members chosen from the Edmonton Public School System. The sample ranged in school size from 15 to 43 teachers with the average being 24.7. The percentage of return of completed questionnaires ranged from 67 per cent to 100 per cent from individual schools and was 86 per cent from the total sample. Complete data were collected for 529 teachers.

During the months of February and March, the questionnaires, staff lists and self-addressed return envelopes were distributed by

Summary of Social Science Survey Results for Year 1960
 The administration of the Social Science Survey was completed. The
 total number of questionnaires returned was 1,000. The
 included rates of social participation. Results of the survey are
 included, and the results are shown in the following table. The
 individuals included in the survey are shown in the table of
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Individuals included in the survey are shown in the table of
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 the survey.

An instrument designed to measure the degree of social
 participation is included in the survey. The results are shown
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During the month of January and February, the survey
 results are shown in the table of individuals included in
 the survey.

the writer, and a brief overview of the purpose and nature of the study plus an explanation of the mechanics of answering the questionnaires were given at school staff meetings. The odd and even numbered individuals were given the alphabetized and reverse order staff lists, respectively. The teachers were asked to independently complete the questionnaires during the same day as the distribution. In order to obtain a measure of test-retest reliability of the instruments used in this study, the instruments were readministered after a one month interval to the teachers and principal of one average size school. Every reasonable effort was made to get completed questionnaires from all the professional personnel.

The school means on the Professional Role Orientation Scale ranged from 98.45 to 107.00 with a total sample mean of 102.83. Significant differences among and between the school means when grouped according to their quartile membership on the professionalism scale were found. This indicates that the schools used in this study varied significantly in their professional role orientation. Within schools significant differences were found among the four groups classified on the basis of professionalism in each and every school. These results gave the justification for the use of the quartile groupings as the basis for classifying the other variables under study where it was required for the analysis.

Results Related to the Hypotheses

The almost complete absence of significant relationships between the rates of emergent interaction within schools and the average professional role orientation of their teacher groups indicate that Hypothesis One was not substantiated by the data collected from the sample of 25 schools. The correlational analysis yielded negative but insignificant correlations between the average professional role orientation and the mean perceived and attributed rate of emergent interaction scores for schools. The analysis of covariance using perceived rate of interaction data found no significant differences among nor between the groups classified on the basis of the school's quartile membership on the Professional Role Orientation Scale but when attributed rate of interaction data was used, the differences among the groups approached significance and the difference between the top and bottom quartile was significant at the .05 level. These differences were explained by the variation among the groups in the percentage of returned questionnaires. Therefore, for this sample the degree of professional role orientation prevalent in a school had no significant relationship with the school's rate of emergent interaction.

The extension to Hypotheses One, stating that a positive relationship between the rate of emergent interaction and the extent of professional role orientation existed among individuals within the schools, was not substantiated. The number of significant correlations yielded

by the correlational analysis was directly attributable to chance, as were the number of significant differences found by the analysis of variance of the data for each school. The results of the correlational analysis and analysis of covariance of the data for all individuals over all schools were not significant at the .05 level.

The results of the analyses of the relationship between the strength of the sentiments of friendship within a teacher group and their average professional role orientation indicated that Hypothesis Two should be rejected. The correlational analysis yielded a Pearson product-moment correlation of .16, which was not significant at the .05 level. No significant differences in strength of the sentiments of friendship were found among nor between the means of the schools when grouped according to their average professional role orientation.

The analysis of the relationship between the strength of the sentiment of friendship and the professional role orientation of individuals yielded results warranting the acceptance of the extension to Hypothesis Two. A Pearson product-moment correlation of .18 and a correlation ratio of .24, both significant at the .05 level, were obtained using the total sample data. The analysis of variance of the strength of sentiment data for the total sample classified on the basis of within school professional role orientation quartile groups revealed significant differences among the means and the Newman-Keuls comparison among the ordered means disclosed that the top quartile professional role orientation group had a mean score significantly

higher than the means for the other groups. There was reason to believe that several of the correlates of professionalism may have acted as mediating variables in the relationship described above.

The results of the statistical analysis of the data pertaining to the hypothesis that the degree of consensus within teacher groups on professional role orientation was positively related to their average professional role orientation supported the rejection of this hypothesis. A Kruskal-Wallis analysis of variance found no significant differences among the sums of the ranks of the school variances on the Professional Role Orientation Scale when classified on the basis of their professional role orientation. The Spearman rank correlation of .03 between the ranks of the size of school variances and the rank of school means on the Professional Role Orientation Scale was not significant. Therefore, the degree of consensus within teacher groups on professional role orientation was not significantly related to their average professional role orientation.

Hypothesis Four, stating that the values, attitudes and opinions contained in a professional role orientation were integrated into the norms of teacher groups, was tested by an investigation of two propositions: (a) the higher the cohesiveness of a group the smaller the group variance on the professionalism scale, and (b) the lower the score on the professionalism scale the lower the esteem granted to an individual by the group. The finding that there was no significant

relationship between the cohesiveness of a school and the size of the variance on the professionalism scale has led the writer to conclude that there was an 'absence of group standards' with respect to professional role orientation among the teacher groups used in this study. The results of the investigation of the data pertaining to the second proposition indicated that there was no significant relationship between a person's professional role orientation and his social esteem rank. Since both propositions were rejected the writer has concluded that Hypothesis Four was rejected and has accepted the alternate hypothesis that the values, attitudes and opinions contained in a professional role orientation were not integrated into the norms of the sample of teacher groups investigated in this study.

The results of the statistical analyses demonstrated that there was no significant relationship between the level of cohesiveness within a teacher group and the group's average professional role orientation. Therefore, Hypothesis Five was rejected.

The statistical analysis of the relationship put forward in Hypothesis Six, that there was a positive relationship between the professional role orientation of the teachers and the technical esteem in which they were held by the teacher group, indicate that it should be rejected. No consistently significant relationship was found.

The hypothesis that there was a "positive relationship between the professional role orientation of the teachers and the social esteem in which they are held by the teacher group" was rejected. There was

a negative correlation between social esteem in eighteen of the twenty-five schools; two of which were significant at the .05 level when a two-tailed test of significance was used and four of which were significantly negative when a Kaiser directional two-sided test was employed. The results obtained could not be explained entirely by chance. Therefore, if any relationship existed between the social esteem and professional role orientation of individuals within the schools utilized in this study it was a negative one. The Kruskal-Wallis analysis of variance found only one school with significant differences among the ranks granted to individuals classified on the basis of within school professional role orientation quartile groups. This was less than the number expected by chance. The group values upon which social esteem was adjudged were not those associated with a professional role orientation.

The results of the statistical analysis dictated the rejection of Hypothesis Eight: the relationship between professional role orientation and technical and social esteem had no connection with the average professional role orientation of the school. The Spearman rank correlations between the degree of correspondence between professional role orientation, technical esteem, and the professionalism of the school and between professional role orientation, social esteem, and the professionalism of the school were not significant at the .05 level. The results of the Kruskal-Wallis analysis of variance showed that the differences among the schools were not significant. The schools could

be considered samples drawn from the same population. These results indicate that there was no significant relationship between the professionalism of the schools and the degree of correspondence between professionalism and technical and social esteem. Taking into account the conclusions reached for Hypotheses Six, Seven and Eight, the results of the investigation of the relationships between technical esteem, social esteem and professionalism indicate that they were not significantly positive within schools nor among schools with the possible exception of social esteem which may be significantly and negatively correlated with the individual's professional role orientation.

Hypothesis Nine stated, "There will be a positive relationship between the rankings according to technical and social esteem and this relationship will be closer in the teacher groups having a higher average professional role orientation." The Spearman rank correlation of .09 between the two sets of variables was not significant at the .05 level. The Kruskal-Wallis analysis of variance yielded an H value less than the critical value at the .05 level for three degrees of freedom. The differences among the professionalism groups were not significant and the groups could be considered samples drawn from the same population. These results justified the rejection of the hypothesized relationship.

The hypothesized positive relationship between the level of a principal's social and technical esteem and his professional role orientation was not supported by the data. The Spearman rank correlations of .33 and .20 between the technical esteem, social esteem and

scores on the Professional Role Orientation Scale, respectively, were not significant at the .05 level. An analysis of variance found significant differences among the principals' mean scores on the Professional Role Orientation Scale indicating that they were not random samples drawn from the same population of professionalism scores but the Kruskal-Wallis analysis showed that the differences among their technical and social esteem indices were not significant. Therefore, the groups could be considered random samples drawn from the same population. This signifies that there was no relationship between the absolute professional role orientation of principals and their technical and social esteem within school. The same conclusion was reached when the relative professional role orientation of principals within schools was related to their technical and social esteem.

"Subgroups will vary significantly in their degree of professional role orientation," was the proposition posed in Hypothesis Eleven. The results of the analyses of variance and Newman Keuls comparisons among work subgroups within schools showed that in only one school, number six, were there significant differences among and between the work subgroups in their Professional Role Orientation Scale scores. Similarly, school number seven was the only school having significant differences among and between its social subgroups on professionalism. The number of significant results was less than that expected by chance. These results justified the rejection of Hypothesis Eleven and acceptance of the alternative that the social and work subgroups

on the variable of professional role orientation could be considered samples drawn from the same population. Teachers in this sample did not use the values associated with a professional role orientation in establishing social and work subgroup membership.

Hypothesis Twelve stated, "Members of subgroups will be of a similar professional role type." The results of the analysis of variance showed that there were significant differences among and between means of the work subgroups within one, two, none, two and two schools on the Knowledge, Service, Core-Organization, Colleague-Professions and Client-Autonomy sub-scales, respectively. There were significant differences among and between means of the social subgroups within one, two, three, none and four schools on the sub-scales, respectively. Six schools had significant differences among their work subgroups on one of the professional role types while nine schools had significant differences among their social subgroups. These frequencies were not substantially different from that expected by chance. These results indicated that work and social subgroups were not founded around professional role types. Incorporating the conclusion reached with respect to Hypothesis Eleven, teachers formed subgroups around values differing from those contained in a professional role orientation and the professional role types.

"Teachers with high professional role orientation will tend to be regular group members; teachers with low professional role orientation will tend to be deviates," was not corroborated by the data.

A chi-square comparison of observed and expected frequencies of the teachers, grouped according to their within school quartile membership on the Professional Role Orientation Scale, in the bottom quartile of the social esteem structures revealed that the distribution of scores did not differ significantly from that expected if there were no differences among the groups with respect to the number of deviates. The identification of deviates in the teacher groups used in this study was independent of the extent that the individuals held the values associated with a professional role orientation.

Hypothesis Fourteen was "Teachers' satisfaction will be positively related to their professional role orientation." The results of the correlational analysis showed that there was a significant correlation between satisfaction and professional role orientation when the data from the total sample were used but in only five of the twenty-five schools was the correlation significant. For the total sample, only three per cent of the variance on the satisfaction scores could be predicted from knowledge of the professional role orientation scores. Over the total sample, the analysis of variance revealed significant differences among the quartile groups. There was a significant difference at the .05 level between the group A mean of 21.64 and the group D mean of 20.21. The ordering of the satisfaction means corresponded to the ordering of the professional role orientation means. Schools 10 and 17 had significant differences among their means and between groups A and D and A and C, respectively. Therefore, for the total sample of

The first part of the paper is devoted to the study of the
 problem of the existence of a solution of the system
 of the equations of the motion of the particles of the
 system. It is shown that the system of equations is
 solvable if and only if the initial data satisfy the
 conditions of the theorem. The second part of the
 paper is devoted to the study of the properties of the
 solution of the system. It is shown that the solution
 is unique and depends continuously on the initial data.
 The third part of the paper is devoted to the study of
 the properties of the solution of the system. It is
 shown that the solution is bounded and has a finite
 number of singularities. The fourth part of the paper
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 solution of the system. It is shown that the solution
 is bounded and has a finite number of singularities.

individuals Hypothesis Fourteen was substantiated. Teachers' satisfaction was positively related to their professional role orientation. An inspection of the results within schools showed that the effects of this relationship were repressed by other variables within the school except in schools ten and seventeen. The low correlations and infrequent significant differences denote the fact that the relationship between professional role orientation and satisfaction was a minor one.

The investigation of the relationship between the principal's professional role orientation and the teachers' satisfaction with his performance found that only six per cent of the variance of the evaluation scores obtained by the principals was attributable to their professional role orientation and that the professionalism quartile groups could be considered random samples drawn from the same population of Principal Evaluation Questionnaire scores. The analysis of the relationship between teacher professional role orientation and their evaluation of the performance of the principal indicated that, if any relationship existed, it was a negative one. There were no significant differences among nor between the professionalism groups in any of the twenty-five schools nor the total sample when grouped according to within school professional role orientation. Group B and C schools were found to rate the performance of their principals significantly higher than the group D schools. These results would indicate that in the teachers' appraisal of the principal his professional role orientation was of little consequence and that knowledge of a teacher's professional role

The first of these is the fact that the system is not a simple one. It is a complex system, and the complexity is not only in the number of components, but also in the way they are connected. The second is the fact that the system is not a static one. It is a dynamic system, and the dynamics are not only in the way the components change, but also in the way they interact with each other. The third is the fact that the system is not a linear one. It is a non-linear system, and the non-linearity is not only in the way the components behave, but also in the way they interact with each other. The fourth is the fact that the system is not a deterministic one. It is a stochastic system, and the stochasticity is not only in the way the components behave, but also in the way they interact with each other. The fifth is the fact that the system is not a simple one. It is a complex system, and the complexity is not only in the number of components, but also in the way they are connected. The sixth is the fact that the system is not a static one. It is a dynamic system, and the dynamics are not only in the way the components change, but also in the way they interact with each other. The seventh is the fact that the system is not a linear one. It is a non-linear system, and the non-linearity is not only in the way the components behave, but also in the way they interact with each other. The eighth is the fact that the system is not a deterministic one. It is a stochastic system, and the stochasticity is not only in the way the components behave, but also in the way they interact with each other. The ninth is the fact that the system is not a simple one. It is a complex system, and the complexity is not only in the number of components, but also in the way they are connected. The tenth is the fact that the system is not a static one. It is a dynamic system, and the dynamics are not only in the way the components change, but also in the way they interact with each other. The eleventh is the fact that the system is not a linear one. It is a non-linear system, and the non-linearity is not only in the way the components behave, but also in the way they interact with each other. The twelfth is the fact that the system is not a deterministic one. It is a stochastic system, and the stochasticity is not only in the way the components behave, but also in the way they interact with each other. The thirteenth is the fact that the system is not a simple one. It is a complex system, and the complexity is not only in the number of components, but also in the way they are connected. The fourteenth is the fact that the system is not a static one. It is a dynamic system, and the dynamics are not only in the way the components change, but also in the way they interact with each other. The fifteenth is the fact that the system is not a linear one. It is a non-linear system, and the non-linearity is not only in the way the components behave, but also in the way they interact with each other. The sixteenth is the fact that the system is not a deterministic one. It is a stochastic system, and the stochasticity is not only in the way the components behave, but also in the way they interact with each other. The seventeenth is the fact that the system is not a simple one. It is a complex system, and the complexity is not only in the number of components, but also in the way they are connected. The eighteenth is the fact that the system is not a static one. It is a dynamic system, and the dynamics are not only in the way the components change, but also in the way they interact with each other. The nineteenth is the fact that the system is not a linear one. It is a non-linear system, and the non-linearity is not only in the way the components behave, but also in the way they interact with each other. The twentieth is the fact that the system is not a deterministic one. It is a stochastic system, and the stochasticity is not only in the way the components behave, but also in the way they interact with each other.

orientation would not enhance the accuracy of predicting their ratings of the principal. Looking at school professional role orientation it would appear that the median professionalism schools tended to rate their principals higher than did the high and low professionalism schools.

Results Related to Homans' Exchange Theory

One basic relationship enunciated by Homans was that there was a positive connection between the rate of interaction between persons and their sentiments. A correlational analysis of the relationship between the perceived rate of interaction and the strength of the sentiments of friendship within schools and for individuals yielded significant Pearson product-moment correlations of .48 and .18, respectively. The Pearson product-moment correlations of .58 and .50 between the cohesiveness of a school and its rates of perceived and attributed rates of social interaction were significant at the .01 level. Between technical esteem and perceived and attributed rates of social interaction, respectively, the median Spearman rank correlations of .34 and .58 were significant at the .05 level. The median Spearman rank correlations of .36 and .58 between social esteem and perceived and attributed social interaction ranks for each school, respectively, were significant. The rank correlations of .38 and .45 between the principal's index of social interaction with other staff members and his technical and social esteem, respectively, were significant at the .05

level. The correlations of .28 and .17 between satisfaction and perceived and attributed rates of interaction, respectively, indicated that there was a significant and positive relationship. Knowledge of the perceived rate of interaction was found to be a better predictor of satisfaction than knowledge of the attributed rate of interaction. The correlation of .37 between perceived rate of interaction and the scores obtained on the satisfaction with social relationships item was significant at the .05 level. Between the principal's perceived and attributed rates of interaction and his rating among the principals, significant correlations of .35 and .46, respectively, were obtained. The positive relationship between interaction and sentiments was substantiated by the data gathered from teacher groups.

Other basic relationships enunciated by Homans were that there were positive relationships among the various sentiments expressed by a group and between these sentiments and certain elements of the social structure. A correlation of .46, significant at the .05 level, showed that there was a positive relationship between the level of friendship and the cohesiveness of teacher groups. The correlation of .16 between strength of sentiment and satisfaction for the total sample of individuals was significant. The Pearson product-moment correlation of .44 between strength of sentiments of friendship and the satisfaction with social relationships within the school was significant at the .05 level. These results substantiated the premise that there were positive

very much the same as the one in the first part of the paper.

The first part of the paper is devoted to the study of the

properties of the function $f(x)$ defined by the equation

$f(x) = \frac{1}{2} (f(x-1) + f(x+1))$ for $x \in \mathbb{R}$.

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properties of the function $f(x)$ defined by the equation

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relationships among strength of sentiments of friendship, satisfaction with social relationships, total satisfaction, and the cohesiveness of groups. The median values of .08 between technical esteem and satisfaction and $-.01$ between social esteem and satisfaction were not significant. The premise of a positive relationship between total satisfaction and esteem was not substantiated and in the case of high professional schools a negative relationship may exist. When the relationship between teacher satisfaction and their rating of principals was investigated a correlation of .26, significant at the .05 level, was found. A significant correlation of .80 was obtained between school satisfaction and the staff rating of principal. The Spearman rank correlation of .60 between the principal's technical esteem and the evaluation of his performance was significant but the correlation of .29 between his social esteem and teachers' satisfaction with his performance was not significant. These results indicate that certain hypothesized relationships among sentiments and between sentiments and some of the structural elements were substantiated by the data gathered from teacher groups but that other relationships need modification in their statement or further investigation before their validity can be stated.

The results of the investigation of the hypothesized relationships put forward by Homans have in large part confirmed the appropriateness of the use of his model in studying the social behavior and social structure of teachers and teacher groups.

The first of these is the fact that the system is not a simple one. It is a complex one, and it is one that is not easily understood. The second is the fact that the system is not a simple one. It is a complex one, and it is one that is not easily understood. The third is the fact that the system is not a simple one. It is a complex one, and it is one that is not easily understood. The fourth is the fact that the system is not a simple one. It is a complex one, and it is one that is not easily understood. The fifth is the fact that the system is not a simple one. It is a complex one, and it is one that is not easily understood. The sixth is the fact that the system is not a simple one. It is a complex one, and it is one that is not easily understood. The seventh is the fact that the system is not a simple one. It is a complex one, and it is one that is not easily understood. The eighth is the fact that the system is not a simple one. It is a complex one, and it is one that is not easily understood. The ninth is the fact that the system is not a simple one. It is a complex one, and it is one that is not easily understood. The tenth is the fact that the system is not a simple one. It is a complex one, and it is one that is not easily understood.

II. CONCLUSIONS AND IMPLICATIONS

This chapter ends with a list of conclusions derived from the study and statements of implications for further research and for educational administration.

Conclusions

For the sample used in this study:

1. The degree of professional role orientation prevalent in a school had no significant relationship with the school's rate of emergent interaction.

2. There was no significant relationship between the professional role orientation of individuals and their perceived and attributed rate of social interaction.

3. The strength of the sentiments of friendship within teacher groups was independent of their average professional role orientation.

4. There was a positive relationship between the professional role orientation of a teacher and his strength of sentiments of friendship. It was postulated that this relationship may have been mediated by two other variables: (1) the number of years of teaching experience in a school and (2) the total number of years of formal training held by the individual.

5. The degree of consensus within teacher groups on the professional role orientation was independent of their average professional role orientation.

6. The values, attitudes and opinions contained in a professional role orientation were not integrated into the norms of teacher groups.

7. The level of cohesiveness within a teacher group was independent on the group's average professional role orientation.

8. The technical esteem in which teachers were held by their teacher group was independent of their professional role orientation.

9. The group values upon which social esteem was adjudged were not those associated with a professional role orientation.

10. The relationship between professional role orientation and technical and social esteem had no connection with the average professional role orientation of the school.

11. The relationship between rankings according to technical and social esteem was not closer in the teacher groups having a higher average professional role orientation.

12. The technical and social esteem in which a principal was held by his staff of teachers was independent of his professional role orientation.

13. Teachers did not use the values associated with a professional role orientation in establishing social and work subgroups within schools.

14. Work and social subgroups were not founded around professional role types.

15. The identification of deviates in the teacher groups was on a basis independent of the extent that the deviant individual held

1. The first objective of the study was to determine the effect of the treatment on the growth of the fish.
2. The second objective was to determine the effect of the treatment on the survival of the fish.
3. The third objective was to determine the effect of the treatment on the feed conversion ratio of the fish.
4. The fourth objective was to determine the effect of the treatment on the water quality parameters.
5. The fifth objective was to determine the effect of the treatment on the overall health of the fish.
6. The sixth objective was to determine the effect of the treatment on the economic viability of the fish farming.
7. The seventh objective was to determine the effect of the treatment on the environmental impact of the fish farming.
8. The eighth objective was to determine the effect of the treatment on the social impact of the fish farming.
9. The ninth objective was to determine the effect of the treatment on the cultural impact of the fish farming.
10. The tenth objective was to determine the effect of the treatment on the historical impact of the fish farming.

the values associated with a professional role orientation.

16. Teachers' satisfaction was positively related to their professional role orientation but was not of sufficient magnitude to justify predictions within schools.

17. In the teachers' appraisal of the performance of the principal, his professional role orientation was of little consequence.

18. The teacher's evaluation of the performance of the principal was independent of the teacher's professional role orientation.

General Conclusions

The values associated with a professional role orientation did not form the "in-group" or dominant social values in this sample of teacher groups.

The relationships hypothesized in Homans' "Exchange Theory" form an appropriate model for studying the social behavior and social structure of teachers and teacher groups.

Implications for Research

If Ratsoy's findings indicated that a process of professionalization was operative among teachers,¹ then, since this study discovered no social pressure among the teacher groups promoting these values, other

¹E. W. Ratsoy, "Professional Attitudes of Prospective Teachers," The Canadian Administrator, 5: 33, May, 1966.

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influences need to be investigated. The writer would suggest that perhaps the demands of society, the administrators of school systems, or the work of the teachers' professional organizations may be the instruments promoting the professionalization of teachers. The relationship between professional role orientation and teacher satisfaction may indicate a selection process whereby only the more professionally oriented teachers remain in the profession over an extended period. The question to be answered is "What factors promote the adoption of a professional role orientation by teachers?".

Several questions arise out of the finding of no relationship between the professional role orientation of a teacher and his technical esteem. In terms of the tasks of teaching, does it matter if teachers do or do not hold the values associated with a professional role orientation? Does it make a difference in their teaching practices, in their handling of children, in the assistance they offer, in the extent that they further their own knowledge of the subject-matter and teaching practices? As far as the primary tasks of teaching are concerned, the much expressed need for teachers to be professional may be an appendant.

Since, in large part, Homans' propositions about the relationships among the variables within the Internal System and between the Internal System variables and teacher satisfaction were found to be valid for the teacher groups used in this study, it would be of some importance to educational administration to investigate the relationship between these variables and the productivity and individual development

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of the teachers and teacher groups. It would also be of interest to discover the relationship between the Background Factors, Required and Given Behavior variables and the Internal System variables for teachers and schools. Turner's conceptual scheme would serve as a good indicator of what factors may be taken into consideration in such a study.²

The approach adopted by Blocker et al.³ toward the statistical analysis of sociometric data holds promise for the development of techniques that facilitate the ready analysis of this form of data. The procedure for identifying subgroups and their membership by factor analyzing the cubed reciprocated choice matrix, as outlined in this study, seemed to do the job as well as the more cumbersome sociogram method. An investigation should be made in order to determine the social positions of those individuals not identified as members of a subgroup. The procedure should be refined in order to identify those persons that occupy interstitial positions. One line that may be followed for this purpose would be to determine the significance of the communalities associated with each individual when the factor field included all those factors with an eigenvalue greater than one. Another approach would be

²Arthur N. Turner, "A Conceptual Scheme for Describing Work Group Behavior," in Paul R. Lawrence, et al. (eds), Organizational Behavior and Administration, pp. 213-233.

³Clyde E. Blocker, et al., A Method for the Sociometric Analysis of the Informal Organization Within Large Work Groups, pp. 26-29.

to determine the meaning of those cases where an eigenvalue greater than one was obtained by only one person had a factor loading greater than .500 on that factor.

The writer would recommend that rather than using the first five choices on the social esteem item, which assumes that these were the close associations that the individual had and that the number was the same for all individuals, use be made of the procedure followed by Blocker et al., which asks the individuals to list " . . . as few or as many names as you feel are necessary to reply fully."⁴ This would better indicate the number of close associations the individual did have and perhaps more accurately reflect the subgroups that did exist.

Implications for Educational Administration

This study indicates that Willard Waller's conception of the teachers in a school as forming a close-knit colleague group, " . . . with a distinctive subculture organized around the professional norms of teaching,"⁵ is incorrect for the groups of teachers used in this study. Bidwell, in noting the professionalization of teachers that has led to a diffusion of authority and a certain structural looseness in

⁴Ibid., p. 41.

⁵Cited by Charles E. Bidwell, "The School as a Formal Organization," in James G. March (ed.), Handbook of Organizations, p. 979.

school organization, has stated that we must rely more heavily on the social controls of the teacher colleague group and the internalized norms of professionalism for internal coordination and control.⁶ As previously noted, the thought was that with an increase in social control and internalization of norms there should be a reduction in the need for superordinate control.⁷ Since this study found that there was no social pressure exerted by teacher groups on their members to hold the values associated with a professional role orientation and that these values were not integrated into the norms of these teacher groups then the premise upon which Bidwell has based his conclusion was not valid for these groups of teachers and his conclusion of the need for a reduction in the need for superordinate control was inappropriate. For the schools used in this study, the question becomes, "Does the reduction of superordinate control depend on whether or not the teachers do in fact exert social control and have the values associated with professionalism integrated into their norms or does it depend on how the teachers perceive the legitimacy of the superordinate to exercise control?". Perhaps with a reduction in superordinate control and an increase in the interdependence of teachers in the performance of their tasks, the teacher groups would start to exercise social control and evolve norms integrating the values contained in a professional role orientation.

⁶Bidwell, op. cit., pp. 1013-1015.

⁷Supra, p. 13.

If one can assume that the technical esteem in which a person is held reflects his functional authority, then the significant relationship between the technical esteem of a principal and the teachers' satisfaction with his performance adds weight to Peabody's typology of authority and the need for principals to have functional authority.⁸ The significant correlation between the emergent rate of interaction engaged in by the principal and his technical esteem suggests a method for enhancing his technical esteem. The finding that principals generally ranked above the median on technical esteem and below the median on social esteem suggests that principals may be more able to gain a position of leadership on the technical esteem structure than on the social esteem structure. The finding of no significant relationship between the social esteem of the principal and the teachers' ratings of his performance indicates that obtaining a position of leadership on the social esteem structure may not be as important as some writers have suggested.⁹ The significant correlation between the principal's rate of social interaction and his social esteem would indicate that in the principal's attempt to increase his technical esteem by greater social interaction he would also enhance his social

⁸Robert Peabody, "Perceptions of Organizational Authority: A Comparative Analysis." Administrative Science 6: pp. 463-482, March, 1962.

⁹T. Parsons, "Introduction," The Theory of Social and Economic Organizations, pp. 59-60.

It was a very interesting meeting and I had a very good time.

The first part of the meeting was devoted to a general discussion of the

work of the committee and the progress of the various projects.

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esteem. The significant correlation between the rate of social interaction in a school and the cohesiveness of the staff and the correlation of .80 between the cohesiveness and the staff's rating of the principal suggests that if a principal can promote more social interaction in a school he can expect teachers to look more favourably upon his performance and perhaps lend greater co-operation to the principal in the exercise of his tasks. Since this study found that the relative rate of interaction of the principal among the teachers was not as important as the absolute level of interaction among the teachers in determining their satisfaction with the performance of the principal, then, perhaps, this second method of promoting the teachers' ratings of the principal holds more promise.

If having a professional role orientation by teachers is a "good thing" and if socialization among teachers does not promote the adoption of this orientation, then the writer feels that principals should be reluctant to reduce the amount of supervision of teachers that they engage in and administrators and professional organizations should not attempt to increase the barriers inhibiting the access of parents and the public-at-large to consultation with teachers. Until proven otherwise, the writer feels that the administrator must assume that it is from these quarters that the pressures arise that direct teachers to expound professional values and adopt a professional role orientation. The maintenance of supervisory practices can also help socialize the new staff members into a commitment to a professional

career and the adoption of a professional role orientation. As Dan C. Lortie, has pointed out with respect to socialization into the legal profession:

Few of us viewing an adept attorney at work can picture him a nervous, uncertain beginner. . . . the beginner has much to learn before his self and his daily round conjoin; he must first perceive the multiple expectations that characterize legal roles, and he must acquire the complex skills needed to match those expectations. He must learn the values of his profession in general and in specific; he must puzzle through many dilemmas before experience results in moral decisiveness. He must act in the presence of others, perceive their evaluations of his performance, and find his assertions of identity confirmed. The development of a professional self-conception involves a complicated chain of perceptions, skills, values, and interactions.¹⁰

Since the teacher group does not socialize the neophyte into a professional role orientation, then perhaps the principal, through his supervision of the neophyte teachers, can expound and reflect this value orientation thereby defining these expectations for the teacher.

¹⁰D. C. Lortie, "Laymen to Lawman: Law School, Careers, and Professional Socialization," Harvard Educational Review, 29, No. 4 (Fall 1959), p. 363.

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APPENDIX

Section 1. The first part of the report is devoted to a general description of the work done during the year. It includes a summary of the progress made in the various branches of the investigation, and a statement of the results obtained.

Section 2. The second part of the report is devoted to a detailed description of the work done during the year. It includes a summary of the progress made in the various branches of the investigation, and a statement of the results obtained.

Section 3. The third part of the report is devoted to a detailed description of the work done during the year. It includes a summary of the progress made in the various branches of the investigation, and a statement of the results obtained.

Section 4. The fourth part of the report is devoted to a detailed description of the work done during the year. It includes a summary of the progress made in the various branches of the investigation, and a statement of the results obtained.

Section 5. The fifth part of the report is devoted to a detailed description of the work done during the year. It includes a summary of the progress made in the various branches of the investigation, and a statement of the results obtained.

Section 6. The sixth part of the report is devoted to a detailed description of the work done during the year. It includes a summary of the progress made in the various branches of the investigation, and a statement of the results obtained.

Section 7. The seventh part of the report is devoted to a detailed description of the work done during the year. It includes a summary of the progress made in the various branches of the investigation, and a statement of the results obtained.

Section 8. The eighth part of the report is devoted to a detailed description of the work done during the year. It includes a summary of the progress made in the various branches of the investigation, and a statement of the results obtained.

Section 9. The ninth part of the report is devoted to a detailed description of the work done during the year. It includes a summary of the progress made in the various branches of the investigation, and a statement of the results obtained.

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APPENDIX A

TEACHER BACKGROUND INFORMATION QUESTIONNAIRE

- (1) School Code Number _____
- (2) Your Number _____
- (3) Number of room in which you spend the majority of your time _____
- (4) Sex: Male _____
Female _____
- (5) Marital status: _____
Single _____
Married _____
Other _____
- (6) Ethnic Origin (as for census) _____
British _____
French _____
German _____
Ukrainian _____
Polish _____
Other European _____
Other (specify) _____
- (7) Age in years _____
18.0 - 24.9 years _____
25.0 - 29.9 years _____
30.0 - 44.9 years _____
45.0 or more _____
- (8) Years of teacher education (as per evaluation for salary). _____
Less than one year _____
1.0 - 1.9 years _____
2.0 - 2.9 years _____
3.0 - 3.9 years _____
4.0 - 4.9 years _____
5.0 - 5.9 years _____
6.0 - 6.9 years _____
7.0 or more _____
- (9) What is your total teaching experience including this year? _____
One year or less _____
2 - 3 years _____
4 - 6 years _____
7 - 9 years _____
10 - 12 years _____
13 - 17 years _____
18 - 21 years _____
22 or more years _____
- (10) Years of experience in this school (count this school year as a full year) _____
- (11) Circle the one grade in which you spend most of your teaching time this year.
1 2 3 4 5 6
7 8 9 10 11 12
- (12) Circle all the other grades that you teach this year.
1 2 3 4 5 6
7 8 9 10 11 12
- (13) If you are teaching in a departmentalized junior or senior high school please indicate the area of specialization in which you are currently teaching.
Mathematics _____
Social Studies _____
Science _____
English _____
Modern and classical languages _____
Ind. Arts, H. Ec., Business Ed., or Technical _____
Fine Arts _____
Phys. Ed. _____
Guidance _____
Other or none (specify) _____
- (14) Please indicate the subjects that you teach (be specific: i.e., Math. 10, English 30 and Grade 7 science)

- (15) What is the area of specialization in which you are most interested?
Mathematics _____
Social Studies _____
Science _____
English _____
Modern and classical languages _____
Ind. Arts, H. Ec., Fine Arts, Bus. Ed., Tech., Phys. Ed. (circle) _____
Guidance _____
Other or none (specify) _____

(16) Please check any of the following positions that you hold.

301

- a. principal _____
- b. vice-principal _____
- c. department head (specify) _____
- d. librarian _____
- e. guidance counsellor _____
- f. relieving teacher _____
(not substitute) _____
- g. other administrative _____
position (Please _____
specify) _____

APPENDIX B**TEACHER OPINION QUESTIONNAIRE**

Teacher Opinion Questionnaire

Teacher Opinion Section

INSTRUCTIONS: Please indicate the degree to which you personally agree or disagree with each of the statements below by checking (✓) the appropriate box at the right of each set of responses. **Work rapidly.** First reactions are important. Please react to every item whether or not you feel that you have enough information.

1 - 4. For data analysis

5. It is vital to his effectiveness that a teacher should possess a thorough knowledge of his subject matter.

Agree strongly ----- ☐ 1
 Agree ----- ☐ 2
 Undecided ----- ☐ 3
 Disagree ----- 4 ☐
 Disagree strongly ----- 5 ☐

6. Teachers should be evaluated primarily on the basis of their ability to communicate knowledge.

Agree strongly ----- ☐ 1
 Agree ----- ☐ 2
 Undecided ----- ☐ 3
 Disagree ----- 4 ☐
 Disagree strongly ----- 5 ☐

7. Persons should be allowed to teach in Alberta even if their total education is less than that required for a B.Ed.

Agree strongly ----- ☐ 1
 Agree ----- ☐ 2
 Undecided ----- ☐ 3
 Disagree ----- 4 ☐
 Disagree strongly ----- 5 ☐

8. Persons who do not meet the present Alberta certification requirements should be allowed to teach because of the teacher shortage.

Agree strongly ----- ☐ 1
 Agree ----- ☐ 2
 Undecided ----- ☐ 3
 Disagree ----- 4 ☐
 Disagree strongly ----- 5 ☐

9. A teacher's practice should be based primarily on his acquaintance with educational literature and research.

Agree strongly ----- ☐ 1
 Agree ----- ☐ 2
 Undecided ----- ☐ 3
 Disagree ----- 4 ☐
 Disagree strongly ----- 5 ☐

10. Knowledge of educational theory is vital for effective teaching.

Agree strongly ----- ☐ 1
 Agree ----- ☐ 2
 Undecided ----- ☐ 3
 Disagree ----- 4 ☐
 Disagree strongly ----- 5 ☐

11. Teachers should not be expected to give after-hours instruction to pupils who are not doing well in their school work.

Agree strongly ----- ☐ 1
 Agree ----- ☐ 2
 Undecided ----- ☐ 3
 Disagree ----- 4 ☐
 Disagree strongly ----- 5 ☐

12. I would rather teach than do anything else for a living.

Agree strongly ----- ☐ 1
 Agree ----- ☐ 2
 Undecided ----- ☐ 3
 Disagree ----- 4 ☐
 Disagree strongly ----- 5 ☐

13. Because of what I am able to do for society, I would continue to teach even if I could earn more money at another vocation.

Agree strongly ----- ☐ 1
 Agree ----- ☐ 2
 Undecided ----- ☐ 3
 Disagree ----- 4 ☐
 Disagree strongly ----- 5 ☐

14. A teacher should be prepared to devote the whole of his working lifetime to the occupation of teaching.

Agree strongly ----- ☐ 1
 Agree ----- ☐ 2
 Undecided ----- ☐ 3
 Disagree ----- 4 ☐
 Disagree strongly ----- 5 ☐

15. A teacher should encourage as many of his students as possible to enter teaching as a vocation.

Agree strongly ----- ☐ 1
 Agree ----- ☐ 2
 Undecided ----- ☐ 3
 Disagree ----- 4 ☐
 Disagree strongly ----- 5 ☐

16. A teacher should promote what he deems to be needed social changes through his contact with students in schools.

Agree strongly ----- ☐ 1
 Agree ----- ☐ 2
 Undecided ----- ☐ 3
 Disagree ----- 4 ☐
 Disagree strongly ----- 5 ☐

- 17.** Membership in The Alberta Teachers' Association should be more important to teachers than membership in most other organizations to which they belong.
- Agree strongly ----- ☐ 1
 Agree ----- ☐ 2
 Undecided ----- ☐ 3
 Disagree ----- 4 ☐
 Disagree strongly ----- 5 ☐
- 18.** I do not feel that I am a real integral part of the provincial Association.
- Agree strongly ----- ☐ 1
 Agree ----- ☐ 2
 Undecided ----- ☐ 3
 Disagree ----- 4 ☐
 Disagree strongly ----- 5 ☐
- 19.** If I had the choice I would not belong to The Alberta Teachers' Association at the provincial level.
- Agree strongly ----- ☐ 1
 Agree ----- ☐ 2
 Undecided ----- ☐ 3
 Disagree ----- 4 ☐
 Disagree strongly ----- 5 ☐
- 20.** Only the A.T.A. should speak for all teachers on professional matters.
- Agree strongly ----- ☐ 1
 Agree ----- ☐ 2
 Undecided ----- ☐ 3
 Disagree ----- 4 ☐
 Disagree strongly ----- 5 ☐
- 21.** In case of a dispute between The Alberta Teachers' Association, at the provincial level, and some other provincial authority or agency, the teacher owes his prime loyalty to the A.T.A.
- Agree strongly ----- ☐ 1
 Agree ----- ☐ 2
 Undecided ----- ☐ 3
 Disagree ----- 4 ☐
 Disagree strongly ----- 5 ☐
- 22.** The Alberta Teachers' Association is the best body to oversee the enforcement of a code of ethics for teachers.
- Agree strongly ----- ☐ 1
 Agree ----- ☐ 2
 Undecided ----- ☐ 3
 Disagree ----- 4 ☐
 Disagree strongly ----- 5 ☐
- 23.** Teachers should try to live up to what they think are the standards of the profession even if the administration or the community does not seem to respect these same standards.
- Agree strongly ----- ☐ 1
 Agree ----- ☐ 2
 Undecided ----- ☐ 3
 Disagree ----- 4 ☐
 Disagree strongly ----- 5 ☐
- 24.** The degree of respect that it commands from other teachers around the province is not a major criterion of a good school.
- Agree strongly ----- ☐ 1
 Agree ----- ☐ 2
 Undecided ----- ☐ 3
 Disagree ----- 4 ☐
 Disagree strongly ----- 5 ☐
- 25.** Teachers should subscribe to and read the major professional journals.
- Agree strongly ----- ☐ 1
 Agree ----- ☐ 2
 Undecided ----- ☐ 3
 Disagree ----- 4 ☐
 Disagree strongly ----- 5 ☐
- 26.** A teacher should not try to put what he believes to be standards and ideals of good teaching into practice if the procedures of the school prohibit them.
- Agree strongly ----- ☐ 1
 Agree ----- ☐ 2
 Undecided ----- ☐ 3
 Disagree ----- 4 ☐
 Disagree strongly ----- 5 ☐
- 27.** A teacher should be a member of at least one specialist council and should take an active part in it.
- Agree strongly ----- ☐ 1
 Agree ----- ☐ 2
 Undecided ----- ☐ 3
 Disagree ----- 4 ☐
 Disagree strongly ----- 5 ☐
- 28.** A teacher should not give more consideration to the views of other teachers than to those of the public.
- Agree strongly ----- ☐ 1
 Agree ----- ☐ 2
 Undecided ----- ☐ 3
 Disagree ----- 4 ☐
 Disagree strongly ----- 5 ☐
- 29.** Unless a teacher is satisfied that it is best for the student, a teacher should not do anything which someone else tells him to do.
- Agree strongly ----- ☐ 1
 Agree ----- ☐ 2
 Undecided ----- ☐ 3
 Disagree ----- 4 ☐
 Disagree strongly ----- 5 ☐
- 30.** A teacher should not do anything that may jeopardize the interests of his students, regardless of whos gives the directive or what school rules state.
- Agree strongly ----- ☐ 1
 Agree ----- ☐ 2
 Undecided ----- ☐ 3
 Disagree ----- 4 ☐
 Disagree strongly ----- 5 ☐

- 31.** Small matters should not have to be referred to someone higher up for a final answer.

Agree strongly ----- ☐ 1
 Agree ----- ☐ 2
 Undecided ----- ☐ 3
 Disagree ----- 4 ☐
 Disagree strongly ----- 5 ☐

- 32.** The ultimate authority over the major educational decisions should be exercised by qualified teachers.

Agree strongly ----- ☐ 1
 Agree ----- ☐ 2
 Undecided ----- ☐ 3
 Disagree ----- 4 ☐
 Disagree strongly ----- 5 ☐

- 33.** Decisions concerning textbooks, references and courses of study should be made by teachers or groups of teachers and not by the Department of Education.

Agree strongly ----- ☐ 1
 Agree ----- ☐ 2
 Undecided ----- ☐ 3
 Disagree ----- 4 ☐
 Disagree strongly ----- 5 ☐

- 34.** Teachers should not be any more concerned than they are at present about the adequacy of the schools' programs for all students.

Agree strongly ----- ☐ 1
 Agree ----- ☐ 2
 Undecided ----- ☐ 3
 Disagree ----- 4 ☐
 Disagree strongly ----- 5 ☐

APPENDIX C

SCHOOL SOCIAL ORGANIZATION QUESTIONNAIRE

SCHOOL SOCIAL ORGANIZATION QUESTIONNAIRE

The purpose of this questionnaire is to provide information on various social organization characteristics of schools, that is, information on interaction patterns, sub-group formation, and so on.

It is important that your answers be independent so please do not discuss them with other teachers. It is essential that all the questions and their parts are answered.

You will be provided with a separate staff list for your school on which each staff member has been assigned a number. In completing this form please indicate yourself and other staff members by number and not by name. This ensures anonymity and facilitates computer analysis of the data. All information given in this questionnaire will be held in the strictest confidence.

School Code Number _____

Your Number _____

- (1) Indicate the number of times during a normal week that you would be likely to socialize informally with each individual: i.e., during recesses, lunch hours, preparation periods, before and after school, etc.

Member	Rarely	About once a Week	Several times a Week	Once or twice a Day	Several times a Day or more often
1					
2					
3					
4					
5					
6					
7					
8					
9					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					
23					
24					
25					
26					
27					
28					
29					
30					
31					
32					
33					
34					
35					
36					
37					
38					
39					
40					
41					
42					
43					
44					

- (2) Indicate the members of the staff whom you would invite to a social affair at your home if the occasion was restricted to your ten closest friends from all walks of life. (Do not include spouses in your calculations).

1	2	3	4	5	6	7	8	9	10	11	12
13	14	15	16	17	18	19	20	21	22	23	24
25	26	27	28	29	30	31	32	33	34	35	36
37	38	39	40	41	42	43	44	NONE			

- (3) In answer to the question "Whom would I like to work with?", assign rank orders of preference (one being the highest rank) to the members of the staff.

Rank	Member	Rank	Member	Rank	Member	Rank	Member
1		12		23		34	
2		13		24		35	
3		14		25		36	
4		15		26		37	
5		16		27		38	
6		17		28		39	
7		18		29		40	
8		19		30		41	
9		20		31		42	
10		21		32		43	
11		22		33		44	

- (4) In answer to the question "Whom would I like to spend my leisure time with?" assign rank orders of preference (one being the highest rank) to the members of the staff.

Rank	Member	Rank	Member	Rank	Member	Rank	Member
1		12		23		34	
2		13		24		35	
3		14		25		36	
4		15		26		37	
5		16		27		38	
6		17		28		39	
7		18		29		40	
8		19		30		41	
9		20		31		42	
10		21		32		43	
11		22		33		44	

APPENDIX D

PRINCIPAL EVALUATION QUESTIONNAIRE

PRINCIPAL EVALUATION QUESTIONNAIRE

INSTRUCTIONS: Please indicate your assessment of the principal on the various dimensions listed below by circling the appropriate responses.

Code : 5 Exceptional
 4 very good
 3 good
 2 fair
 1 poor

JOB KNOWLEDGE

extent of theoretical knowledge
 and practical know-how as related
 to the job of principal

1 2 3 4 5

JUDGMENT

ability to obtain and analyze facts
 and apply sound judgment

1 2 3 4 5

ORGANIZING ABILITY

effectiveness in planning own work
 and that of the teachers

1 2 3 4 5

ATTITUDE

enthusiasm shown for the job; loyalty
 to the objectives of education;
 ability to accept criticism and willing-
 ness to change his mind after deliber-
 ation

1 2 3 4 5

DEPENDABILITY

reliability in carrying out assign-
 ments conscientiously and with
 effectiveness; meets his commitments

1 2 3 4 5

CREATIVITY

ability to apply imagination to job,
 to develop new plans, introduce new
 educational techniques and programs,
 etc.

1 2 3 4 5

DEALING WITH PEOPLE

ability to get along with others; tact,
 diplomacy; ability to command and
 influence people

1 2 3 4 5

DELEGATION

ability to assign work to others and
 to coordinate others through distribu-
 tion of workload and responsibility

1 2 3 4 5

LEADERSHIP

ability to stimulate teachers to
perform their jobs effectively

1 2 3 4 5

PERSONAL EFFICIENCY

speed and effectiveness in carry-
ing out duties not assigned to
subordinates

1 2 3 4 5

APPENDIX E

TEACHER SATISFACTION QUESTIONNAIRE

TEACHER SATISFACTION QUESTIONNAIRE

School Code Number _____

Your Number _____

- (1) Please check the one statement below which best indicates your satisfaction with your present teaching position in all of its aspects.
- _____ It is difficult to imagine a more satisfactory teaching situation.
- _____ This teaching situation is one of the best that I know of.
- _____ I consider this among the better teaching situations.
- _____ This teaching situation is better than average.
- _____ This teaching situation is only slightly better than average.
- _____ I consider this among the poorer teaching situations.
- (2) Please check the one statement below which best indicates your satisfaction with the social relationships among the teachers.
- _____ It is difficult to imagine a group with better social relationships.
- _____ Social relationships among the teachers are unusually good.
- _____ The group has better than average social relationships.
- _____ Social relationships are probably slightly above average.
- _____ This group is about normal for teachers in social relationships.
- _____ It would be much more pleasant if the social relationships were better.
- (3) To what extent are you satisfied with the educational policies followed in your school as compared to policies that you feel to be most desirable educationally? (Check one).
- _____ The educational policies followed here are the best that I can imagine.
- _____ The educational policies followed here are unusually good.
- _____ In general the educational policies followed here are very good.
- _____ The educational policies followed here are good in general but a few should be improved.
- _____ Some of the educational policies followed here are undesirable although many are satisfactory.
- _____ I consider many of the educational policies here to be undesirable.
- (4) What would probably be your reaction if you were offered a non-teaching position at an increase in salary of \$500 per school year? Assume that the position being offered is one in which you would use your academic training and that, in general, your abilities would be well suited to the job. (Check one).
- _____ I would take the job.
- _____ I would seriously consider it and might well decide to take it.
- _____ I would consider it but do not know whether or not I would decide to take it.
- _____ I would consider it but I would be unfavorably inclined from the outset.
- _____ I would not even make further inquiry about the job.

- (5) How plentiful do you feel employment opportunities are in non-teaching positions for persons of your sex with your particular subject-matter training? Consider only non-teaching jobs with salaries about the same as, or better than, teaching jobs. (Check one).

_____ There are so many opportunities of this type in my field that those teachers who are attracted have a wide choice.

_____ There are enough opportunities that a teacher in my field has little difficulty finding one.

_____ There are enough opportunities that one may be found in a reasonable length of time.

_____ There are few such opportunities for teachers in my field.

_____ Opportunities of this type are very scarce for teachers in my field.

- (6) In what manner does the administration in your school react when teachers express criticisms of the school's educational policies in faculty meetings? (Check one).

_____ The administration urges teachers to express such criticisms and warmly receives them.

_____ The administration encourages criticisms and receives them in a fair manner.

_____ Criticisms are accepted by the administration without prejudice to the teacher.

_____ Criticisms are listened to by the administration but sometimes in a rather cool manner.

_____ Criticisms are sometimes listened to by the administration but not very graciously.

_____ The administration does not like criticisms to be expressed and disregards them when they are made.

APPENDIX F

THE MEANS AND STANDARD DEVIATIONS OF THE EMERGENT
INTERACTION, STRENGTH OF THE SENTIMENTS OF
FRIENDSHIP, SATISFACTION AND PRINCIPAL
EVALUATION SCORES FOR EACH SCHOOL

School		Perceived Interaction	Attributed Interaction	Strength of Sent.	Satisfaction	PEQ
01	X	56.65	48.41	4.47	20.71	32.65
	S	20.17	13.97	4.02	4.28	10.77
03	X	39.46	36.46	1.92	15.23	23.23
	S	14.88	12.73	1.33	3.04	9.03
04	X	54.00	45.65	1.65	18.85	27.00
	S	24.32	13.90	1.93	2.99	8.94
05	X	50.15	39.31	0.54	20.85	31.92
	S	30.23	8.80	1.34	2.48	12.64
06	X	50.00	46.47	0.35	20.29	32.24
	S	23.70	17.28	0.76	4.48	12.32
07	X	56.71	43.53	2.29	19.18	30.35
	S	20.57	13.79	2.54	3.50	10.06
09	X	56.53	51.33	2.33	25.07	42.27
	S	14.35	11.63	2.67	4.54	15.49
10	X	62.29	52.59	1.94	21.35	28.12
	S	26.42	17.37	2.44	3.61	10.35
12	X	63.50	63.83	2.56	23.11	35.33
	S	27.03	17.93	2.61	3.20	10.75
13	X	61.58	45.75	3.50	21.15	35.08
	S	18.48	11.36	2.84	3.29	12.75
14	X	45.89	34.84	2.53	19.95	33.68
	S	24.22	13.30	2.66	4.43	10.97
15	X	63.00	60.19	2.48	19.23	32.39
	S	42.35	24.53	2.70	5.20	9.72
16	X	54.07	52.93	3.53	20.97	36.37
	S	26.38	21.44	3.93	3.36	9.72
17	X	55.73	51.82	3.36	19.09	33.30
	S	21.74	19.00	3.60	3.90	10.38
18	X	71.21	70.72	2.34	22.03	40.00
	S	25.40	25.37	2.77	2.66	9.71
19	X	63.55	46.77	2.77	23.73	38.45
	S	15.39	14.73	2.25	2.28	10.06
21	X	80.33	69.28	3.94	24.00	41.94
	S	28.63	18.81	3.37	3.70	7.78
22	X	71.97	56.69	3.07	20.34	28.62
	S	28.79	20.99	2.96	3.95	10.25
25	X	57.97	56.93	1.55	21.90	37.21
	S	22.89	25.81	2.13	3.95	11.58
27	X	54.37	46.89	2.84	22.11	36.26
	S	30.70	17.88	2.91	2.40	10.87

APPENDIX F (Cont.)

School		Perceived Interaction	Attributed Interaction	Strength of Sent.	Satisfaction	PEQ
28	X	63.88	62.38	2.88	18.96	30.88
	S	29.91	23.86	2.80	2.92	9.43
29	X	50.21	41.36	1.71	17.71	30.93
	S	22.47	11.76	2.08	3.84	12.17
30	X	64.17	57.39	2.11	22.39	31.28
	S	28.06	23.11	2.00	3.97	9.73
31	X	36.87	33.07	1.33	18.80	33.20
	S	14.06	14.78	1.92	2.54	10.24
33	X	60.24	57.00	2.24	22.76	33.90
	S	20.19	13.88	2.14	4.01	11.30

APPENDIX G

MEAN SCORES OF WORK SUBGROUPS ON THE PROFESSIONAL ROLE
ORIENTATION SCALE AND ON THE KNOWLEDGE, SERVICE,
CORE-ORGANIZATIONAL, COLLEAGUE-PROFESSIONAL
AND AUTONOMY-STUDENT ORIENTED SUB-SCALES

School	Subgroup	PROS	Sub-scales				
			1	2	3	4	5
01	1	104.00	20.00	20.00	22.17	20.83	21.00
	2	107.75	20.50	21.00	21.25	22.50	22.50
	3	98.00	20.67	17.00	19.00	19.67	21.67
	4	97.50	17.50	17.50	20.50	20.00	22.00
03	1	105.20	17.60	21.00	19.80	21.80	25.00
	2	101.00	18.60	20.80	19.00	21.00	21.60
	3	110.00	20.50	18.75	22.00	24.75	24.00
04	1	110.29	21.71	19.14	21.57	23.43	24.43
	2	101.67	18.00	20.33	20.33	20.33	22.67
	3	104.50	20.50	19.50	20.50	19.50	24.50
	4	109.33	21.00	22.67	19.67	22.33	23.67
	5	104.50	19.50	19.50	21.00	22.50	22.00
05	1	104.00	17.00	17.25	21.50	21.75	26.50
	2	102.00	29.67	17.00	22.00	21.33	22.00
	3	107.00	21.00	17.67	22.67	20.67	25.00
	4	103.50	16.50	19.00	23.50	22.00	22.50
06	1	108.33	20.33	20.00	22.50	21.67	23.83
	2	97.00	17.00	15.50	20.00	20.00	24.50
	3	91.00	17.75	14.00	22.00	17.75	19.50
07	1	106.00	21.00	21.25	20.25	19.50	24.00
	2	102.00	21.50	18.00	17.50	21.00	24.00
	3	100.25	20.25	18.00	17.25	20.75	24.00
10	1	99.25	20.25	18.75	18.00	19.75	22.50
	2	107.25	20.75	19.50	21.00	21.50	24.50
	3	100.50	20.25	17.25	21.25	21.75	20.00
	4	112.67	23.00	18.00	23.67	23.33	24.67
12	1	105.40	20.00	16.40	23.60	21.40	24.00
	2	97.50	20.00	16.00	19.00	20.00	22.50
	3	99.00	21.33	16.33	17.33	21.00	23.00
	4	102.50	20.00	15.00	22.50	20.50	24.50
	5	103.00	20.50	15.50	22.00	22.00	23.00
	6	104.50	18.00	22.00	22.00	19.50	23.00

APPENDIX G (Cont.)

School	Subgroup	PROS	Sub-scales				
			1	2	3	4	5
13	1	105.20	18.80	19.60	20.40	22.00	24.40
	2	107.80	20.60	21.60	20.80	21.80	23.00
	3	106.00	18.00	20.50	22.00	22.50	23.00
14	1	115.25	21.75	21.25	25.00	24.00	23.25
	2	99.00	19.00	13.00	22.50	23.00	21.50
15	1	93.00	20.60	15.20	17.40	19.00	20.80
	2	96.75	19.25	17.50	17.75	20.25	22.00
	3	104.50	20.00	19.25	22.25	22.50	20.50
	4	100.00	19.33	18.67	21.67	19.67	20.67
	5	95.00	19.33	16.33	16.33	21.33	21.67
	6	101.50	21.50	15.50	19.00	21.50	24.00
	7	108.50	23.50	17.50	20.50	24.00	23.00
16	1	105.00	21.14	19.57	19.43	22.43	22.43
	2	100.43	19.43	19.29	19.57	20.14	22.00
	3	102.40	19.60	17.80	21.00	21.20	22.80
	4	92.00	19.00	17.50	16.50	19.50	19.50
17	1	105.80	21.30	18.90	19.40	22.60	23.60
	2	100.60	21.10	17.80	17.40	21.40	22.80
	3	97.00	18.50	15.00	19.50	20.50	23.50
	4	98.00	22.00	14.00	18.50	20.50	23.00
	5	98.00	20.00	19.00	16.50	20.00	22.50
18	1	96.00	18.75	16.50	15.50	21.00	24.25
	2	108.00	20.33	17.83	21.83	21.83	26.17
	3	96.50	18.75	16.50	18.50	22.50	20.25
	4	98.75	18.75	14.00	20.50	22.25	23.25
	5	117.33	22.00	22.33	25.67	22.67	24.67
	6	106.00	22.00	20.50	16.50	23.50	23.50
19	1	105.25	19.75	17.00	20.00	22.00	26.50
	2	105.75	20.25	18.00	18.25	23.75	25.50
	3	103.00	19.67	18.00	17.67	21.33	26.33
	4	95.67	19.67	14.00	15.33	21.67	25.00
21	1	104.40	21.40	17.60	21.40	22.40	21.60
	2	108.50	20.50	17.00	24.25	22.50	24.25
	3	94.33	17.00	14.33	19.33	22.00	21.67
	4	106.00	21.50	19.00	22.50	22.00	21.00
	5	108.50	21.50	21.50	20.00	21.50	24.00
	6	108.50	19.50	19.00	22.50	22.00	25.50
	7	99.50	18.00	16.50	24.00	19.00	22.00

APPENDIX G (Cont.)

School	Subgroup	PROS	Sub-scales				
			1	2	3	4	5
22	1	99.00	21.33	15.33	18.67	22.67	21.00
	2	102.00	21.50	12.00	25.00	22.00	21.50
	3	92.50	17.50	15.00	18.00	19.50	22.50
	4	101.00	20.50	18.50	19.00	20.50	22.50
	5	104.00	19.00	22.00	18.50	21.00	23.50
	6	105.00	21.00	19.00	20.50	23.00	21.50
25	1	108.43	20.86	20.29	21.86	22.71	22.71
	2	98.14	19.29	17.86	15.00	21.29	24.71
	3	102.00	19.00	19.75	19.75	20.25	23.25
	4	107.33	20.67	21.33	19.00	20.67	25.67
	5	92.50	15.00	20.50	16.00	21.00	20.00
27	1	104.67	21.00	18.00	19.17	21.67	24.83
	2	119.33	22.00	23.67	25.00	26.33	22.33
	3	100.25	21.00	16.75	16.00	21.25	25.25
	4	107.75	19.75	18.50	22.00	22.25	25.25
28	1	101.67	20.50	16.00	20.17	21.67	23.33
	2	108.83	21.33	20.33	20.50	22.83	23.83
	3	105.00	22.00	16.50	20.50	22.50	23.50
	4	103.00	20.50	16.50	18.50	23.00	24.50
29	1	98.20	19.20	18.00	17.80	19.60	23.60
	2	95.50	19.00	17.50	18.33	20.67	20.00
	3	106.00	21.33	19.67	21.33	22.67	21.00
	4	102.00	18.00	20.00	21.00	21.50	21.50
30	1	100.29	19.86	19.14	17.00	21.43	22.86
	2	94.00	19.60	17.00	13.00	20.40	24.00
	3	110.33	21.33	21.00	22.33	24.00	21.67
	4	105.00	19.00	19.67	19.67	24.00	22.67
31	1	94.40	18.80	17.00	16.80	20.00	21.80
	2	105.25	20.50	16.50	21.25	21.00	23.50
	3	102.00	17.50	18.50	22.50	21.50	22.00
33	1	100.75	20.00	17.63	18.75	21.50	22.88
	2	102.00	19.60	17.80	18.40	22.60	23.60
	3	100.33	20.00	16.33	18.33	23.67	22.00
	4	102.50	22.50	17.00	20.00	21.00	22.00

APPENDIX H

MEAN SCORES OF SOCIAL SUBGROUPS ON THE PROFESSIONAL ROLE
ORIENTATION SCALE AND ON THE KNOWLEDGE, SERVICE,
CORE-ORGANIZATIONAL, COLLEAGUE-PROFESSIONAL
AND AUTONOMY-STUDENT ORIENTED SUB-SCALES

School	Subgroup	PROS	Sub-scales				
			1	2	3	4	5
01	1	101.00	19.57	19.00	20.43	19.86	22.14
	2	102.33	19.67	18.33	23.67	19.33	21.33
	3	99.67	20.00	17.00	20.00	21.33	21.33
	4	105.50	20.00	21.50	17.50	23.50	23.00
03	1	104.11	18.78	20.56	20.33	21.44	23.00
	2	111.00	19.50	20.00	25.50	23.00	23.00
04	1	107.71	21.29	18.29	20.14	23.43	24.57
	2	109.00	20.00	19.67	20.67	24.33	24.33
	3	105.00	19.25	21.25	19.00	20.50	25.00
	4	113.33	22.67	18.33	23.33	24.33	24.67
	5	111.50	20.00	22.50	22.00	23.50	23.50
05	1	104.50	19.00	17.75	23.25	22.25	22.25
	2	103.33	18.00	17.00	21.33	20.67	26.33
	3	106.67	21.33	17.33	23.00	20.33	24.67
06	1	100.80	16.60	16.60	23.40	21.00	23.20
	2	92.17	16.83	15.50	20.33	17.67	21.83
	3	94.00	16.67	13.00	21.00	19.33	24.00
	4	112.00	19.00	21.00	23.00	23.00	26.00
07	1	104.00	21.86	19.71	19.00	20.29	23.14
	2	102.50	21.50	19.50	17.50	18.50	25.50
	3	88.50	17.50	17.00	15.50	19.50	19.00
10	1	97.00	19.00	18.60	17.00	20.40	22.00
	2	105.33	19.67	18.67	22.33	22.00	22.67
	3	112.67	23.00	18.00	23.67	23.33	24.67
	4	102.33	22.67	18.33	21.00	21.33	19.00
12	1	100.83	19.00	16.17	21.50	20.83	23.33
	2	102.80	21.00	17.40	21.20	20.20	23.00
	3	104.00	20.67	16.67	21.00	21.17	24.50
13	1	103.40	19.40	19.40	21.20	21.20	22.20
	2	108.50	20.50	23.50	16.00	21.00	27.50
	3	116.00	20.50	22.00	24.00	25.00	24.50

TABLE 1

THE FOLLOWING TABLE SHOWS THE RESULTS OF THE INVESTIGATION OF THE CAUSES OF THE ACCIDENTS WHICH OCCURRED IN THE MONTH OF JANUARY, 1910, AND THE RESULTS OF THE INVESTIGATION OF THE CAUSES OF THE ACCIDENTS WHICH OCCURRED IN THE MONTH OF FEBRUARY, 1910.

Month	Year	Month	Year	Month	Year	Month	Year
Jan.	1910	Jan.	1910	Jan.	1910	Jan.	1910
Feb.	1910	Feb.	1910	Feb.	1910	Feb.	1910
Mar.	1910	Mar.	1910	Mar.	1910	Mar.	1910
Apr.	1910	Apr.	1910	Apr.	1910	Apr.	1910
May	1910	May	1910	May	1910	May	1910
June	1910	June	1910	June	1910	June	1910
July	1910	July	1910	July	1910	July	1910
Aug.	1910	Aug.	1910	Aug.	1910	Aug.	1910
Sept.	1910	Sept.	1910	Sept.	1910	Sept.	1910
Oct.	1910	Oct.	1910	Oct.	1910	Oct.	1910
Nov.	1910	Nov.	1910	Nov.	1910	Nov.	1910
Dec.	1910	Dec.	1910	Dec.	1910	Dec.	1910
Jan.	1911	Jan.	1911	Jan.	1911	Jan.	1911
Feb.	1911	Feb.	1911	Feb.	1911	Feb.	1911
Mar.	1911	Mar.	1911	Mar.	1911	Mar.	1911
Apr.	1911	Apr.	1911	Apr.	1911	Apr.	1911
May	1911	May	1911	May	1911	May	1911
June	1911	June	1911	June	1911	June	1911
July	1911	July	1911	July	1911	July	1911
Aug.	1911	Aug.	1911	Aug.	1911	Aug.	1911
Sept.	1911	Sept.	1911	Sept.	1911	Sept.	1911
Oct.	1911	Oct.	1911	Oct.	1911	Oct.	1911
Nov.	1911	Nov.	1911	Nov.	1911	Nov.	1911
Dec.	1911	Dec.	1911	Dec.	1911	Dec.	1911
Jan.	1912	Jan.	1912	Jan.	1912	Jan.	1912
Feb.	1912	Feb.	1912	Feb.	1912	Feb.	1912
Mar.	1912	Mar.	1912	Mar.	1912	Mar.	1912
Apr.	1912	Apr.	1912	Apr.	1912	Apr.	1912
May	1912	May	1912	May	1912	May	1912
June	1912	June	1912	June	1912	June	1912
July	1912	July	1912	July	1912	July	1912
Aug.	1912	Aug.	1912	Aug.	1912	Aug.	1912
Sept.	1912	Sept.	1912	Sept.	1912	Sept.	1912
Oct.	1912	Oct.	1912	Oct.	1912	Oct.	1912
Nov.	1912	Nov.	1912	Nov.	1912	Nov.	1912
Dec.	1912	Dec.	1912	Dec.	1912	Dec.	1912

APPENDIX H (Cont.)

School	Subgroup	PROS	Sub-scales				
			1	2	3	4	5
14	1	110.60	20.80	20.40	23.20	24.00	22.20
	2	105.75	20.25	18.25	23.25	22.25	21.75
	3	105.50	22.00	22.50	19.00	21.00	21.00
	4	99.00	19.00	13.00	22.50	23.00	21.50
	5	105.00	18.00	21.00	21.50	23.50	21.00
15	1	101.83	21.00	18.67	20.33	20.83	21.00
	2	97.60	19.20	17.40	17.80	20.80	22.40
	3	100.00	20.40	16.60	19.00	22.00	22.00
	4	94.25	20.50	16.00	16.75	19.25	21.75
	5	105.33	20.67	18.00	22.33	23.00	21.33
	6	92.00	18.67	16.67	17.33	19.33	20.00
	7	95.50	20.50	15.00	19.50	19.50	21.00
16	1	99.33	20.67	18.50	17.33	20.50	22.33
	2	97.17	19.00	17.50	19.00	20.00	21.67
	3	101.25	20.25	19.25	20.50	19.75	21.50
	4	100.33	19.33	16.33	20.67	22.00	22.00
	5	108.50	21.50	20.00	20.50	23.00	23.50
17	1	98.29	20.29	17.71	17.14	20.57	22.57
	2	107.33	21.33	18.67	18.33	23.67	25.33
	3	99.00	18.00	18.00	16.00	23.00	24.00
	4	105.50	20.50	19.50	20.00	23.50	22.00
	5	101.00	18.50	16.00	22.50	21.00	23.00
	6	94.00	17.00	15.50	18.50	20.00	23.00
18	1	106.83	20.17	19.17	21.50	22.17	23.83
	2	106.50	21.75	20.00	18.00	23.00	23.75
	3	99.33	18.33	17.00	20.33	21.67	22.00
	4	95.40	18.40	16.00	20.20	21.40	19.40
	5	98.25	18.75	17.25	15.00	23.25	24.00
	6	110.00	24.00	13.00	20.50	23.50	29.00
	7	104.00	18.00	16.00	21.00	22.00	27.00
	8	108.50	21.50	16.50	26.00	20.50	24.00
19	1	111.80	19.80	21.00	22.40	22.60	26.00
	2	102.00	19.80	16.00	17.40	22.60	26.20
	3	103.50	18.50	17.50	17.00	23.00	27.50
	4	103.50	18.50	19.50	19.00	21.50	25.00

APPENDIX H (Cont.)

School	Subgroup	PROS	Sub-scales				
			1	2	3	4	5
21	1	104.83	19.33	18.00	21.50	22.83	23.17
	2	107.00	19.25	18.75	24.50	20.25	24.25
	3	110.75	20.25	18.00	26.25	22.50	23.75
	4	99.75	19.50	19.00	19.00	20.75	21.50
	5	108.00	21.50	18.75	21.50	22.75	23.50
	6	97.00	20.25	15.25	20.00	20.50	21.00
	7	111.50	21.00	18.00	23.50	24.00	25.00
	8	106.50	20.50	19.50	21.50	21.00	24.00
22	1	95.80	19.20	15.00	17.80	20.80	23.00
	2	97.67	19.67	13.33	20.33	22.00	22.33
	3	103.00	21.00	19.33	19.33	20.00	23.33
	4	105.00	23.00	15.00	21.33	22.67	23.00
	5	94.00	18.50	17.00	19.00	21.00	18.50
	6	105.00	23.50	15.50	22.50	17.00	26.50
25	1	101.00	19.67	17.67	16.50	21.67	25.50
	2	99.20	18.60	19.60	19.20	21.00	20.80
	3	96.50	18.75	19.00	15.75	20.50	22.50
	4	98.80	17.60	19.60	19.20	20.20	22.20
	5	113.00	20.00	23.00	23.00	23.67	23.33
	6	112.33	21.00	20.33	23.00	24.33	23.67
27	1	107.60	20.60	17.80	21.80	22.20	25.20
	2	104.20	20.80	18.80	20.40	22.20	22.00
	3	97.67	21.67	15.33	18.33	20.00	22.33
	4	105.50	19.50	16.00	24.00	20.50	25.50
28	1	97.25	20.50	16.25	17.75	20.13	22.63
	2	105.00	21.00	18.20	21.20	21.80	22.80
	3	94.00	19.00	15.00	16.00	21.00	23.00
	4	104.33	19.33	21.33	18.33	22.00	23.33
29	1	92.00	18.75	14.50	17.00	20.25	21.50
	2	106.50	19.25	19.75	22.50	22.00	23.00
	3	94.67	18.00	16.67	19.33	20.00	20.67
	4	95.67	18.33	17.67	18.33	19.00	22.33
30	1	99.43	18.86	19.00	15.86	21.43	24.29
	2	92.75	20.00	15.50	14.00	21.00	22.25
	3	110.33	21.33	21.00	22.33	24.00	21.67
	4	106.00	19.50	20.50	18.50	23.00	24.50

APPENDIX H (Cont.)

School	Subgroup	PROS	Sub-scales				
			1	2	3	4	5
31	1	102.25	21.00	16.00	20.75	20.75	23.75
	2	96.50	18.25	19.00	17.25	20.25	21.75
	3	101.33	20.33	16.00	19.33	23.00	22.67
	4	102.67	20.00	14.33	23.00	21.00	21.00
33	1	100.00	19.80	17.40	18.70	20.80	23.30
	2	107.20	20.40	19.20	20.60	23.60	23.40
	3	105.00	20.40	18.60	20.00	23.40	22.60

TABLE 1. SUMMARY OF DATA

TABLE 1. SUMMARY OF DATA						Densities	Densities
1	2	3	4	5	6		
1978	1979	1980	1981	1982	1983	1	2
1978	1979	1980	1981	1982	1983	3	4
1978	1979	1980	1981	1982	1983	5	6
1978	1979	1980	1981	1982	1983	7	8
1978	1979	1980	1981	1982	1983	9	10
1978	1979	1980	1981	1982	1983	11	12
1978	1979	1980	1981	1982	1983	13	14
1978	1979	1980	1981	1982	1983	15	16
1978	1979	1980	1981	1982	1983	17	18
1978	1979	1980	1981	1982	1983	19	20

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